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ABSTRACT

The Ohio State University Libraries On-line Remote Catalog Access and Circulation Control System (LCS) began on-line operations with the conversion of one department library in November 1970. By December all 26 libraries had been converted to the automated system and LCS was fully operational one month ahead of schedule. LCS is designed as a user-oriented system. It utilizes the capabilities of high-speed computers, random access mass storage devices, telecommunication networks, and on-line terminals to provide both traditional circulation services and a unique access to the system by telephone. Part I, "Functional Specification" states explicitly the objectives of the system, the function which it performs, the details of all its interfaces, and the format of its files and tables, and represents the specifications for the computer system. Part II, "User's Guide" is a manual designed for the librarians who actually operate LCS provides detailed instructions for use of LCS terminals. (Author/AB)

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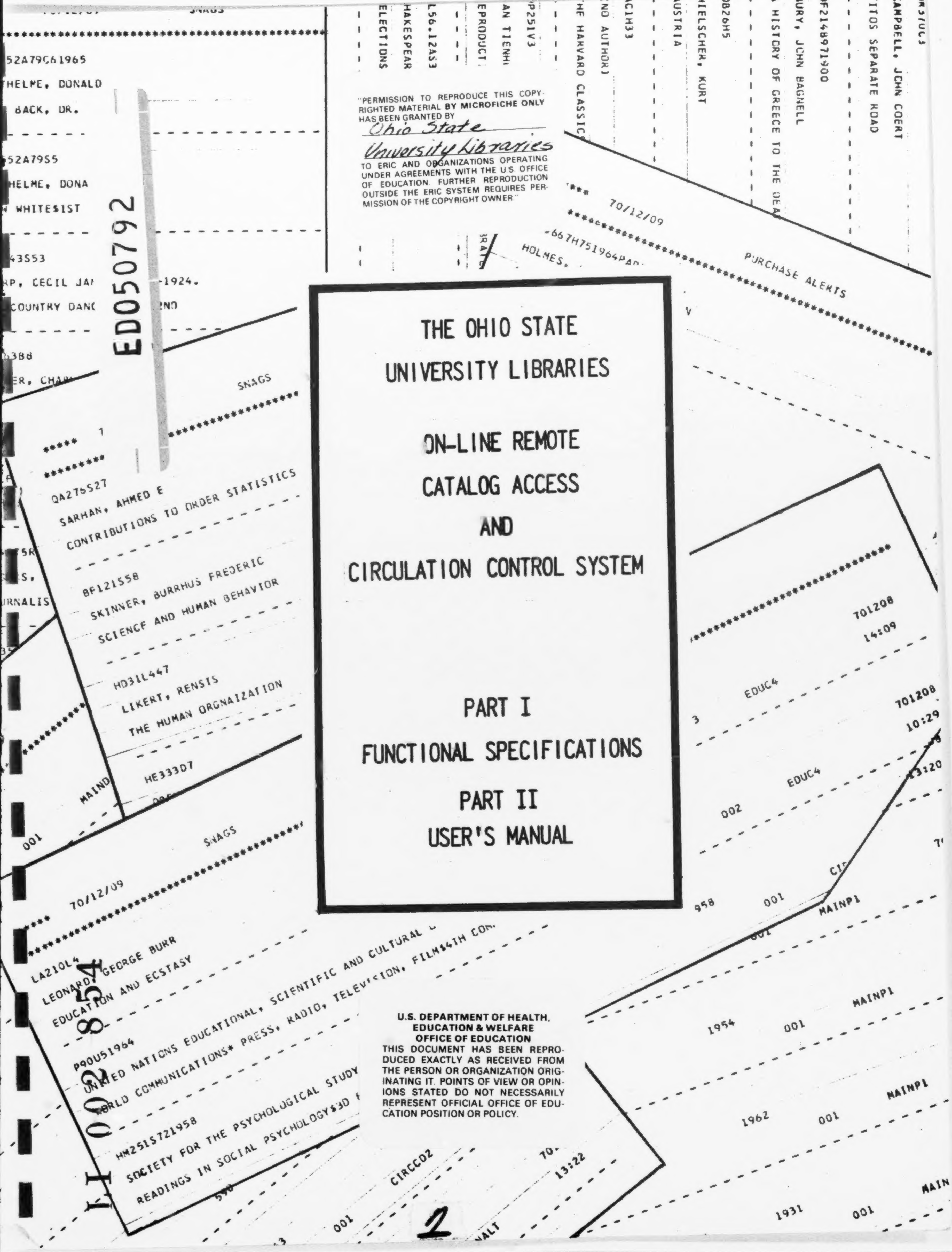
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THE OHIO STATE
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ON-LINE REMOTE
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PART I
FUNCTIONAL SPECIFICATIONS

PART II
USER'S MANUAL

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FUNCTIONAL SPECIFICATION

A CIRCULATION SYSTEM FOR THE OHIO STATE UNIVERSITY LIBRARIES

November 26, 1969

Data Processing Division
INTERNATIONAL BUSINESS MACHINES CORPORATION
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INTRODUCTION

On November 9, 1970 the Ohio State University Libraries On-line Remote Catalog Access and Circulation Control System (LCS) began on-line operations with the conversion of one department library. By December 8, 1970 all 26 libraries had been converted to the automated system and LCS was fully operational one month ahead of schedule.

LCS is designed as a user oriented system. It utilizes the capabilities of high speed computers, random access mass storage devices, telecommunication networks, and on-line terminals to provide both traditional circulation services and a unique access to the system by telephone.

Part I, "Functional Specification", and Part II, "User's Guide", should provide a general description of the LCS for those librarians or systems personnel who have an interest in the field of library automation.

LCS is described as it existed on December 1, 1970. No attempt will be made to bring this document up to date even though the system has undergone a number of changes since the original implementation and will continue to do so in the future.

Part I, "Functional Specification" states explicitly the objectives of the system, the function which it performs, the details of all its interfaces, and the format of its files and tables. It represents the specifications for the computer system. Part II, "User's Guide", is a manual designed for the librarians who actually operate LCS. This manual provides detailed instructions for use of LCS terminals.

This documentation was written by the International Business Machines Corporation, Data Processing Division under contract to the Ohio State University Libraries.

Gerry D. Guthrie
Head, R & D Division
O.S.U. Libraries

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IN Introduction

The purpose of this Functional Specification for the Circulation System is to state explicitly the objectives of the System, the functions which it is to perform, the details of all its interfaces, and the formats of its files and tables. It is intended to be an inclusive specification in the sense that all objectives and functions of the System will be stated herin, and no others will be stated or implied elsewhere. Inorder to achieve this intent the Functional Specification has been designed as a working book which will evolve during the contract period in such a way that it represents at any point in time the currently agreed-on specifications, and contains a scope and level of detail appropriate to that phase of development. At the delivery of the System it will represent the final and complete specification for that System and the basis for any later additions or modifications.

IN.1 Organization

The content of the functional specification is divided into sections appropriate to the nature of the system and the purpose of the document. The following sections are of a functional nature and suitable for general dissemination:

a. Introduction

Describes the functional specification as a whole.

b. Objectives

States the objectives, in terms of functional capabilities, which the system is designed to achieve.

c. Environment

Describes the hardware and software environment in which the Library Circulation System will operate.

d. System control

Discusses system start-up, operation, input and output.

e. Command language

Specifies the type and general arrangement of all user messages, the system TP control monitor and the computer operator.

f. On-line operation

Describes the operating system, telecommunications access method and message processing modules.

g. User's Guide

Provides complete information on how to use the circulation

IN.1 Organization

system, including content, format, and instructions for the user commands. This can be a stand-alone document for general distribution.

h. O.S.U. Programming Responsibilities

A description of tasks related to the development of LCS that are to be performed by the Ohio State University.

The following sections provide detail information at a level intended for specific reference purposes, such as for a system programmer. It is not expected that these sections would be widely distributed.

A. Data Specification

Specifies the content, format, and use in the system for all files and internal formats.

B. Program Documentation

Provides detail information on each program in the system, specifying the function performed, and the actual programming techniques used.

C. Operations Manual

Specifies detail information required by computer operator personnel and system programmers.

In order to facilitate expansion and revision of the functional specification as the system evolves during development, a format which should provide document control and localize changes was adopted. Control is achieved primarily through the document control block found in the upper right-hand corner of each page.

Each section in the document is identified by a 2 character section ID for ease of reference. To facilitate revision, pages are numbered within a subsection at the lowest level appropriate. The date represents the date when that page was issued or changed. Changes will be made in batches so that changes in a given batch will have a common date.

The following section identifications are used within the document.

CP	Current Pages
IN	Introduction
OB	Objectives
EN	Environment
SC	System Control
CL	Command Language
ON	On Line Operation
ST	Support Tasks
UG	User's Guide
PD	Program Documentation
DS	Data Specification
OM	Operations Manual

OB Objectives

The primary objective of the Ohio State University Libraries Circulation System (LCS) is to improve service to library patrons by responding more quickly and accurately to their requests.

OB.1 System Design Goals

The design goals of the system are presented in the following points:

- Fast response to queries on book and serial circulation status
- Efficient software
- Optimum utilization of equipment
- Provision for improvement of data base, software, and hardware
- Ease of system maintenance
- Compatibility with future automation activities in the library

Subsequent sections highlight several of these goals.

OB.1.1 Growth

The system is designed to accomodate data base expansion without major changes in existing programs and no basic changes in file organization or data structure.

The system can later expand to include the capability to search by author and subject and to become part of a total information system which would include acquisition, cataloging, serials control, circulation, and collection management.

OB.1.2 Volume

The Library Circulation System can maintain data on a collection of approximately 1,190,160 titles and can control approximately 250,000 items in circulation at any one time. The capacity for the number of titles is based on a 103 byte average record size for the master file. At the present time there are approximately 800,000 titles in the collection and about 100,000 items in circulation.

The design goal of the software system is to handle 2400 messages per hour.

The preceding volumes are based on utilizing one IBM 2314 Disk Storage Facility, the LCS programs residing in 200,000 bytes of core storage assigned to the highest priority partition, and a mixture of terminals consisting of remote 2260's and remote 2740, mod 1's.

Figure OB.1 provides a summary of file storage space required on disk.

OB. 1. 2 Volume

File Name	Number of Characters	Percent load Factor	Number of Records	Number of Cylinders
MAST	103*	75	892,620	850
CLCSVE	28	100	250,000	50
ALGO	13	100	1,190,000	111
TN	3	100	1,190,000	26
SYSRES				200
QUEUE				150
WORK				215

Total Required: 8 modules of a 2314

* Average

Figure OB. 1 Summary of Disk Space Required by LCS

OB.1.3 Maintenance

The design goal of the system is to provide an optimum configuration of hardware and software to the end that system maintenance can be performed in a relatively simple and straightforward manner. See Section OB.2.2 for a discussion of file maintenance facilities.

OB.2 System Concept

The Ohio State University Library Circulation System (LCS) is a real time, on-line computer system. Through terminal inquiry, the library patron receives rapid response regarding book and journal availability. The circulation system also provides management statistics to the library faculty and staff.

LCS has two modes of operation: on-line and off-line. The latter is commonly referred to as batch processing.

The on-line functions, as far as file maintenance is concerned, only affect one file. The remaining files that are used on-line are read-only files.

All other file functions are performed in the batch mode.

OB.2.1 On-line System Functions

The following sections describe LCS functions that are performed on-line or in support of on-line activities. The manual functions of paging, shelving, and pickup are complementary to the automated system and must be performed effectively or the operation of the automated system is degraded.

Descriptions of the individual program modules required to provide the LCS on-line capabilities are found in Section ON On-line Operation.

OB.2.1.1 Search

LCS provides the capability to identify and determine the circulation status of the books and **serials** in The Ohio State University Libraries circulation system.

The circulation system accesses the master file using a search argument. Exact matches are displayed on the terminal where the search is initiated. Availability, **location**, identification number of patron using the book, and number of patrons waiting to use the book can also be displayed.

There are two types of search provided by LCS. The first type of search is a general search. The general search argument consists of an algorithm which is the first four characters of the main entry and the first five **characters of the lst significant word of** the title. A general search may only be initiated on an IBM 2260 terminal. The output from a general search is a one line entry for each of the matching author/titles in the master file. Each line consists of a line number, author , title and publication date.

An arbitrary limit of 30 lines is placed on responses to the algorithm. If there are more than 30 matches, the algorithm may be reentered and informed to skip over a specified number of matches. The number of matches to be skipped is entered by the terminal operator.

OB.2.1.1 Search

The second type of search is a detailed search of a single title. The output from a detailed search is the master file record, the library holdings for each copy of the title, the circulation information for each of the holdings, and the number of regular patron saves applied to the title. If a specific volume number and copy number are specified, only the information relevant to that specific copy is returned.

The desired title may be specified one of the following two ways: 1.) Call number, and optionally volume and copy, or 2.) Reference line number. The line number identification may only be used at an IBM 2260 terminal and implies the terminal operator has immediately proceeded the detailed search with a general search.

OB.2.1.2 Charge (Check Out)

The charge functions of LCS allows books to be charged out to a patron or patron class and may be accomplished remotely via the telephone or in person at a library.

To charge out a book, the terminal operator must enter the patron identification and the book identification, identifying it either by 1.) Call number, volume and copy numbers, if applicable, or 2.) line number associated with a holding. The line number identification may only be used at a 2260 terminal and implies the terminal operator has immediately preceeded the charge function with a search on the title. See OB.2.1.1 Search.

For each book charged out, a paging slip is printed on a 2740 terminal, identifying the book. See OB.2.1.3 Paging, for the contents of the paging slip.

Several options are available with the charge function and can be exercised via the terminal at the time the charge command is entered. The following discussion presents the various options:

1. Mail. If the book is to be mailed to the patron, the use of the mail option results in an indication of that fact on the paging slip.

2. Special Charge. The special charge option is used when the patron has the book in hand that he wishes to charge. This results in the paging slip being printed at the originating 2740 terminal vice the 2740 terminal associated with the location of the book. But the originating terminal may, in fact, be the one associated with the location of the book. A special charge can be made via a 2260 also.

OB.2.1.2 Charge (Check Out)

3. No Save. The No Save option allows the terminal operator to charge a book to a patron not in the save queue for a title. See OB.2.1.6 SAVE

4. Date due. The date due option allows the operator to establish the loan period of the book, thus overriding the LCS computed date due.

5. Error override. The error override option allows the terminal operator to charge a book to a patron, even though the system maintained status indicators would not normally allow the charge function to occur.

OB 2.1.3 Paging

Paging is the manual operation of retrieving a book for a patron. LCS supports this function by providing a paging slip which contains the call number, volume, copy, oversize indicator, portfolio case number, library location, patron identification number, author, title and date due. A mailing indicator or a save indicator is printed if applicable. The paging slip is printed on a terminal in the library where the book is located. The slip is placed inside the book at the time the book is paged.

0B.2.1.4 Pick up

A book may be charged to a patron who has requested it through the circulation control center or to a patron in a save queue. In either event, the paging slip is placed inside the book and the book is physically located at a circulation desk.

When the patron comes to pick up the book, the library personnel must insure that the individual attempting to pick up the book is the individual to whom the book is charged.

OB.2.1.5 Snags

In some cases, it may be impossible to locate a volume that has been charged to a patron through the circulation control center. When this occurs, it is necessary for a terminal operator to enter a snag transaction. By doing this, the circulation system effectively discharges the book and charges it to a snag. The same terminal operator should then determine if another copy is available and if so charge it to the patron or put him in a save queue.

When the patron who has requested the book arrives at the circulation desk in the library to pick up the book, he is informed of the situation.

A daily listing of snags can be produced via off-line procedures. The library at which the snag occurred is identified. See OB.2.2.4 Deferred Printing Programs.

OB.2.1.6 Save

If a book is in circulation, a patron may request that he be notified when it becomes available for him. This function is called "save". Save transactions are entered through a terminal. Any number of regular patron saves can be applied to a title. But a regular patron save cannot be put on a title as long as there is a copy that is not charged out. In addition, specific copies of a title can be saved for the following special classes of patrons:

- Reserve (See OB.2.1.7 Recall and OB.2.1.8 Reserve)
- Cataloging (See OB.2.1.9 Cataloging)
- Circulation (See OB.2.1.10 Circulation)
- Bindery (See OB.2.1.11 Bindery)
- Repair (See OB.2.1.12 Repair)
- Interlibrary Loan Office (See OB.2.1.13 Interlibrary Loans)

A record of each active save is maintained in the circulation and save file. When the third title save is applied, indication that a purchase alert is required is logged onto the Transaction File. See OB.2.1.19 Purchase Alerts.

When a book is returned to the library for discharge, the LCS system checks to determine if there are any saves applied to the title or the copy. If there are any, a further check is made in the following order of priority:

- Reserve
- Circulation
- Regular patrons by date of request
- Interlibrary loan office
- Reference and Interlibrary loan service (RAILS)
- Kentucky, Ohio, Michigan interlibrary loan (KOMILL)
- Cataloging
- Bindery
- Repair

OB.2.1.6 Save

The highest priority save is printed or displayed along with the acknowledgement that the book has been discharged. The terminal operator visually verifies that the book has been discharged correctly. If it has been, the terminal operator then charges the book to the patron or patron class indicated on the discharge acknowledgement.

At the time a book is charged out, the loan period as computed by the system will be one week if there are any patron saves remaining for that title. Also see OB.2.1.7 Recall.

OB. 2. 1. 7 Recall

A save transaction may, in two cases, cause a recall notice to be generated. A recall notice tells a patron that a book must be returned to the library.

As soon as a save for reserve is applied to a book, a recall notice is generated via off-line procedures. In addition, when a save is applied to a title that is charged to an individual who has faculty privileges, a modified recall notice is generated. This notifies the patron that the book must be returned within a newly computed loan period or, via an administrative procedure, a replacement will be ordered and the cost charged against his department or school book budget. The records in the circulation system are also changed to reflect the new date due.

The actual printing of the recall notices is a batch process.

OB.2.1.8 Reserve

LCS does not process circulation of the reserve room collection. It does, however, note that a volume is in a reserve collection. The reserve book circulation records are maintained manually.

Books in a circulating status that are placed temporarily on reserve are charged out by the terminal operator to the special patron class of reserve for a period of thirteen weeks. See OB.2.1.2 Charge.

The master file record for books permanently relocated to the reserve room or a reserve collection are updated to reflect a non-circulating condition. This function is performed via off-line processing and administrative procedures.

See OB.2.1.7 Recall, for a discussion of the recall of books from circulation for purposes of placing them on reserve.

When the last or only copy of a book that is available for circulation is placed on reserve, a notice is prepared off-line to be sent to all regular patrons in the save queue. The save queue is then cancelled.

OB. 2. 1. 9 Cataloging

Books requiring recataloging are charged to Cataloging. Also, a save for Cataloging may be placed on a book. This has the effect of directing the book to Cataloging after it is returned from circulation.

OB. 2. 1. 10 Circulation

A discrepancy between the spine label in hand and the master file record is assumed by the terminal operator after a query by call number produces no system response. To verify the discrepancy a query is made on an IBM 2260 terminal by algorithm. If a master file record is displayed, the appropriate line number is selected and the holdings data for that title is displayed. If an error is noted in the holdings data a special patron save for circulation is applied to the item. This type of save is extracted off-line from the transaction log and used as the basis of a management report.

Call numbers which appear to duplicate each other are also checked through the above procedure.

OB. 2. 1. 11 Bindery

Books requiring binding are charged to the Bindery. Also, a save for Bindery may be placed on a book. This has the effect of directing the book to the Bindery after it is returned from circulation. See OB. 2. 1. 6 Save for a discussion of the save function.

OB. 2. 1. 12 Repair

Books requiring repair are charged to Repair. Also, a save for Repair may be placed on a book. This has the effect of directing the book to the Repair area after it is returned from circulation.

OB.2.1.13 Interlibrary Loans

An item received from another library on interlibrary loan is not added to the master file. The circulation of the interlibrary loan item is handled manually.

Books are loaned by The Ohio State University Libraries through one of three different points; the Interlibrary Loan Office, the Kentucky, Ohio, Michigan Interlibrary Loan (KOMILL), and the Reference and Interlibrary Loan Service (RAILS). The loan period is four weeks. Each loan point is, in effect, a special patron to whom a book is charged. Once the book is charged to the loan point via an LCS terminal it is processed manually according to applicable interlibrary loan procedures. Should the book become overdue, LCS causes an overdue notice to be sent to the loan point.

OB.2.1.14 Renew

If a patron needs a book longer than allowed by the regular circulation period and if no one else requires the book at the end of the regular circulation period, the book may be renewed. To renew a book, the terminal operator keys in the book identification and patron identification.

If the book cannot be renewed, the patron is advised to return the book.

If the book is renewable, a new date due is computed and transmitted back to the originating terminal; printed on 2740 or displayed on 2260. The terminal operator relays the new date due to the patron. Renewing a book may be accomplished via telephone.

OB.2.1.15 Discharge

Discharging a book has the function of releasing the patron currently charged with the book of responsibility and informing the circulation system that the copy is again available for circulation to another patron.

To discharge a book, the librarian enters the call number, volume number and copy number, if applicable, into the circulation system via a terminal. If a title with the corresponding call number cannot be located or the volume or copy numbers do not agree with a circulation record, an error indication is returned to the originating terminal and the discharge function is terminated. If the terminal is an authorized discharge terminal, and the permanent location of the book and the location of the terminal agree, the discharge procedure continues. If the previous conditions are not satisfied, an error indication is returned to the originating terminal and the function is terminated. The date due is examined to determine if a fine is due and if so, indication of the fine amount is saved for off-line addition to the fine file. If there are any saves against the book the circulation system determines first, if there is a save for the specific book (e.g. Reserve, Bindery) and if not, if there is a save for any copy of the title (i.e., patron waiting for a copy). If either of the save conditions apply, indication of the save situation and patron identification is maintained for notification to the originating

OB. 2. 1. 15 Discharge

terminal. See OB. 2. 1. 6 Save. To complete the discharge function, the status of the book is updated to show it available for circulation. The originating terminal is sent an acknowledgement containing author, title, volume and copy numbers, if applicable, the amount of fine, if applicable, and the next patron to whom the book should be charged if there was a save against the book.

OB.2.1.16 Shelving

When a book is discharged, it is again available for circulation. However, due to the time delay in manual shelving, it may actually be located somewhere between the discharge point and its location on the shelf.

OB.2.1.17 Reported Lost

The circulation system is capable of handling reports of lost books. The circulation system performs the fine operations for a lost book transaction as it does for a discharge function. The lost book transaction results in a later entry in the fine file. When the charge for the book is determined, the lost book record in the fine file is updated to reflect the cost amount.

If the lost book is the only circulation copy of the book, any individual that requested a save is notified via mail that the book is reported lost and the save queue is cancelled. If the lost book is only one of many copies, no notification is sent.

A reported-lost transaction on-line should be followed-up with a batch transaction for the master file if it is determined the book is lost or if it will be some time before the volume is replaced. By generating a batch transaction, the master record is modified. This results in a shorter response time for future inquiries concerning the book.

Lost books can be reported on a daily basis. See SP.5 **Deferred Printing Programs.**

OB.2.1.13 Deferred Fine Payment

The basic fine file maintenance is a batch operation. On-line transactions affecting the fine file are written onto tape and then the tape is later processed in the batch mode.

In order to be able to maintain the fine information, a transaction may be entered on-line notifying the circulation system of the payment of the fine. This same function is provided in the batch mode.

The library circulation system, upon recognizing the fine payment transaction, passes the transaction onto a tape for future processing. In addition, a receipt is printed out at the originating terminal.

Fine notices are prepared for distribution on a weekly basis. See SP.5 **Deferred Printing Programs.**

OB.2.1.19 Purchase Alerts

A record of each save is maintained by the circulation system. The occurrence of a third title save initiates a purchase alert record. Also, a book reported lost will initiate a purchase alert. The purchase alert information is printed off line by the Notice Print Program. See OB.2.1.6 Save.

OB.2.1.20 Missing

An administrative procedure deals in hierarchical fashion with missing items. In summary, a snag (OB.2.1.5 Snags) is changed after three weeks to missing. This is done by submitting a condition code change to LCS, resulting in the Condition code being changed in the master file to reflect the missing condition. The circulation and save file must be cleared of the snag transaction. Saves remain in the file. After the item has appeared for a year on a list of missing items it is officially withdrawn from the collection. The condition code for a withdrawn item is entered into the master file holding record for that particular item to replace the code for missing.

OB.2.1.21 Loan Periods

Loan period is a function of patron class, circulation condition code, and number and type of saves. See OB.2.1.6 Save. LCS takes these elements into consideration in calculating date due. If the calculated loan period is inappropriate in a particular case, the date due can be entered by the terminal operator.

OB. Table 1. Loan Periods indicates the loan periods used by LCS in computing date due.

OB.2.1.21 Loan Periods

Patron Class	Serials	MONOGRAPHS			
		Limited, 1 week	Limited, 3 weeks	Regular	Non Circulating
FACULTY	1	1	3	13	*
STUDENT	—	1	3	3	*
RESERVE	13	13	13	13	*
BINDERY	13	13	13	13	*
REPAIR	4	4	4	4	*
ILL	4	4	4	4	*
RAILS	4	4	4	4	*
KOMILL	4	4	4	4	*
CATALOGING	4	4	4	4	*
CIRCULATION	4	4	4	4	*
LIBRARY USE ONLY	-	—	-	—	*

* Loan Period supplied by terminal operator in the form of date due.

OB.2.1.22 Yearly Maintenance

Procedures and computer programs prepared by The Ohio State University examine, on a yearly basis, the master file and circulation and save file. Program output includes items lost, missing, lacking, overdue, indefinite loans, invalid patron identification numbers, etc.

The purpose of yearly maintenance is to identify conditions that may be abnormal so that appropriate action can be taken to keep the files up to date.

OB.2.1.23 Serials

Access to serial records in the master file is by call number or by algorithm.

A serial record in the master file contains author (if any), title, serial indicator, language indicator if non-English, and first date of publication. Holdings consist of copy and location. An indication of circulation condition is also included.

When a search for a known call number is made, the master file record is displayed on the 2260 or 2740 at which the search was originated. A **search** by algorithm can be made on the 2260 only. Such a search can result in the retrieval of a large number of matching records which are then displayed by author and/or title.

Although a **search** of the master file can be made by algorithm a remote charge cannot be made for any title displayed. A serial can be charged only when the physical volume is in hand at a terminal. Call number, volume and copy, patron identification number, and date due, if other than one week hence, must be keyed in at the terminal. The word "Error" must be keyed in also for reasons discussed in the following paragraph.

The serial record in the master file contains only partial holdings data. This generally consists of copy, number, location, and circulation status. Since each volume of each copy is not carried in the holdings record it is not possible to charge serials in the same manner as books. To be successful in the attempt to

OB.2.1.23 Serials

charge it is necessary to use "Error" as part of the charging message for a particular volume of a serial. When the circulation record is displayed in response to a search it appears after the last line of holdings data.

The serial can be discharged by keying in call number, volume and copy. (See OB.2.1.15 Discharge).

A save cannot be placed on a serial. This is an administrative policy.

Circulation of serials is restricted by administrative policy to certain classes of patrons.

OB.2.2 Off-line System Functions

There are five off-line functions that are performed by LCS. These functions are performed as required. The five functions discussed here are of a general nature.

OB.2.2.1 File Recovery/Generation

The Circulation/Save File is the one dynamic on line file. The other files are either temporary in nature or read only files.

To provide for recovery of the Circulation/Save File in the event a hardware malfunction renders the disk storage device unuseable, all transactions affecting the file are logged onto the transaction file. Should it become necessary to restore the file, the Circulation/Save backup transactions may be posted against the last version of the Circulation/Save File.

Detail procedures for accomplishing the file recovery are contained in the Operations Manual, section OM of the Functional Specification. Detail descriptions of the recovery programs are contained in the Program Specification section, sections PD-LCSCSR and PD-LCSCSL.

OB.2.2.2 File Maintenance

LCS provides maintenance ability for the Master File, Name and Address File, and Fine File. The Circulation/Save File is updated in real time as the on line circulation transactions occur.

The Master File Maintenance Program, PD-LCSMFM, provides add, change, and delete capability for the Master File. Transactions may be from the current acquisition system or from card input, via the Master File Transaction Edit Program.

The Name and Address Maintenance Programs, PD-LCSNCM and PD-LCSNFM, provide maintenance capability for the Name File. Transactions may be card input adds, changes, and deletes, or a quarterly Name File from Administrative Data Processing.

The Fine File Maintenance Program, PD-LCSFFM, provides the maintenance capability for the off line Fine File. Transactions originate on the on line system from fines, fine payments, credits, and lost book entries.

Detail descriptions of the various maintenance programs are contained in the Program Documentation Section, PD. Information on the useage of the programs is contained in the Operations Manual, section OM.

OB.2.2.3 Overdue

Weekly, the Ohio State Libraries send out notices of overdue books. An overdue notice informs the patron that he is charged with a book that has not been returned by the due date.

The capability to identify overdue books is provided by the Circulation/Save Unload Program, PD/LCSUNL. Each circulation record is examined for the overdue situation and when an overdue record is found it is logged onto a notice tape for later printing. The actual printing of the Overdue notice is accomplished by the Notice Print Program, PD/LCSNPP.

Detailed descriptions of the programs are contained in the Program Documentation section, PD.

OB.2.2.4 Deferred Print

Off Line print programs provide the LCS deferred print capability for the various library notices.

The Notice Print Program, PD-LCSNPP, produces the following notices for mailing to patrons.

1) Overdue
2) Saved book available
3) Saved book no longer available
4) Recall

In addition to patron notices, the following library notices or reports are produced:

1) Purchase Alert
2) Snag
3) Discharge Override
4) Claimed Return
5) Charge Override

The Fine Notice Print Program, PD-LCSFNP, uses the Fine File as the basis for producing fine account notices for mailing to patrons.

Detailed descriptions of these programs are contained in the program documentation section, PD.

OB.2.2.5 Statistics

The batch statistics program(s) is the responsibility of the Ohio State University personnel. By extracting transactions from the log tape, statistics can be generated which produce a wide variety of management information.

EN Environment

LCS is a data communication network. A data communication network is defined as a combination of communication channels used to move data between points geographically separate from each other.

The LCS network is controlled by a set of programs that logically control the movement of data. In addition to controlling the network, LCS consists of a series of support programs to load, maintain, and restore the required files. LCS is a single, integrated system of hardware and software.

This section describes the hardware (machinery) and software (computer programs) that comprise the Library Circulation System.

EN.1 Hardware

LCS operates within a System/360 computer which is the center of the data communication network. Connected to the computer are terminals which enter queries or messages and receive responses or messages.

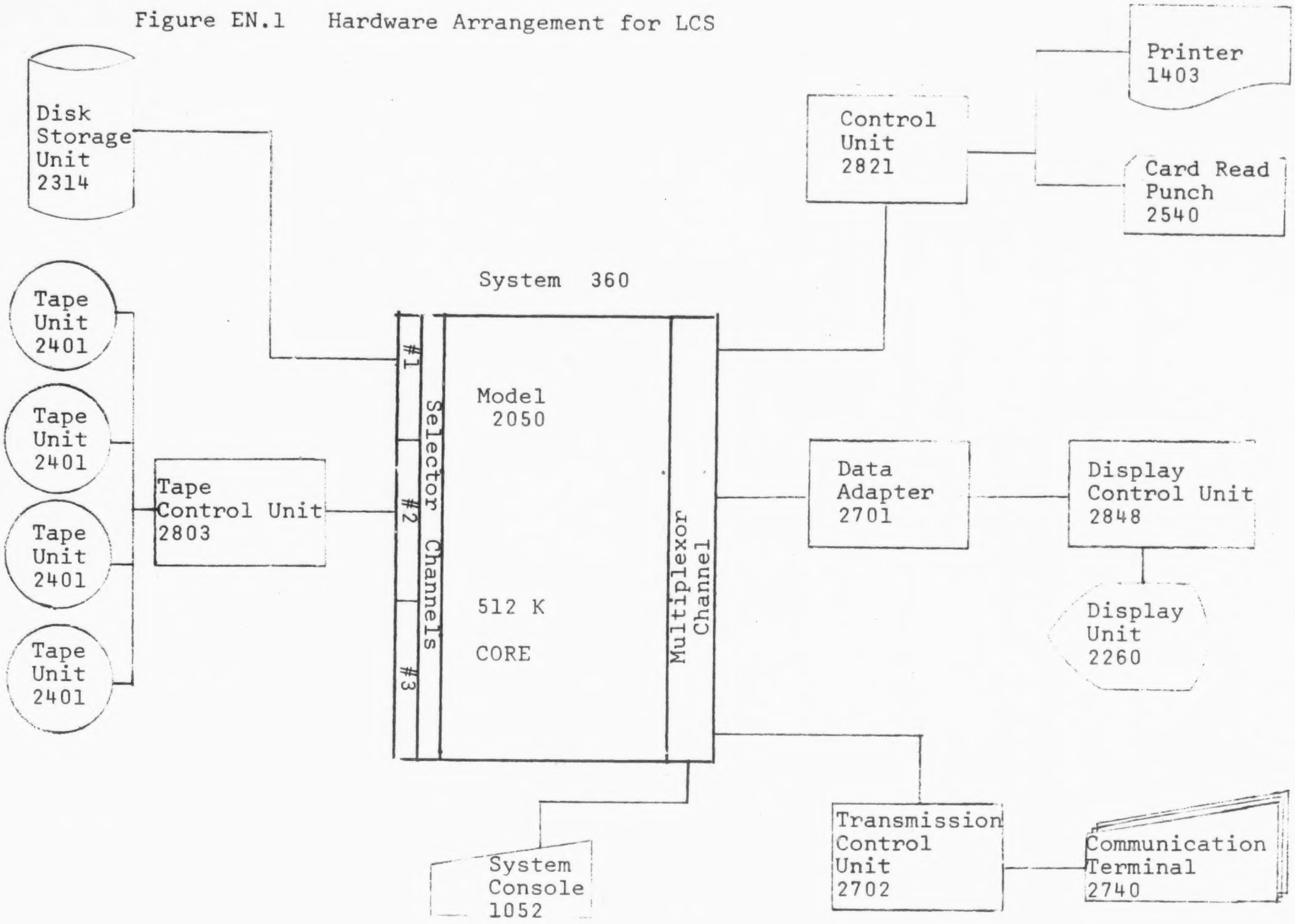
Table EN.1 is a list of the hardware that is used by LCS.

Figure EN.1 is the hardware arrangement for LCS.

Type	Description
2050	Central processing unit
2314	Disk storage unit
2821	Control unit
1403	Printer
1416	Print train
2540	Card read/punch
2803	Tape control unit
2401	Tape drives
2702	Transmission control unit
2701	Data adapter unit
2848	Display control units
2260	Display units
1052	Console
2740	Terminals

Table EN. 1 Hardware equipment for LCS.

Figure EN.1 Hardware Arrangement for LCS


Disk Storage Unit 2314
Tape Unit 2401
Tape Unit 2401
Tape Unit 2401
Tape Unit 2401
Tape Control Unit 2803
System 360
#1
#2
#3
Selector Channels
Model 2050
512 K
CORE
Multiplexor Channel
System Console 1052
Control Unit 2821
Printer 1403
Card Read Punch 2540
Data Adapter 2701
Display Control Unit 2848
Display Unit 2260
Transmission Control Unit 2702
Communication Terminal 2740

EN.1.2.1 Multiplexor Channel Equipment

The multiplexor channel contains multiple subchannels and can operate in either multiplex or burst mode. In LCS the slower speed I/O devices operate on the multiplexor channel. These devices are the 2740, 2260, 1403, and the 2540.

EN.1.2 Channels

The channel directs the flow of information between I/O devices and main storage. It relieves the central processing unit of the task of communicating directly with the devices and permits data processing to proceed concurrently with I/O operations.

Data transfer between main storage and an I/O device occurs in one of two modes: burst or multiplex.

In the burst mode, the I/O device monopolizes the I/O interface and no other device can communicate over the interface during the time a burst is transferred.

In multiplex mode, the facilities in the channel may be shared by a number of concurrently operating I/O devices.

The System/360 Model 50 is equipped with two types of channels: selector and multiplexor.

EN.1.2.2 Selector Channel Equipment

The selector channel operates only in the burst mode. The high speed devices operate on the selector channel. These devices are 2314 and 2401.

LCS uses two of the possible three selector channels that are available on a System /360 Model 50. The 2314 is attached to one of the selector channels and the 2401's are attached to another selector channel.

EN.2 Software

The software environment in which LCS interfaces and becomes a part consists of an operating system, (those computer programs controlling the total resources of the computer system) and the LCS Application Programs, (those computer programs providing the necessary logic for the LCS function).

This section describes the software for the LCS.

EN.2.1 Operating System

The operating system controlling the computer in which the LCS will operate is the IBM System /360 Operating System, Multi programming with a Variable number of Tasks (OS-MVT). OS-MVT will provide the control necessary to manage the LCS application and other jobs which may be scheduled concurrently in the computer.

EN.2.2 Application Programs

The application programs provide the decision making logic, file searching, and data retrieval functions required for the LCS application. LCS consists of on-line programs supporting the teleprocessing function, off-line programs supporting the data base necessary for the on-line system, and other functions that are non-time dependent.

The on-line programs are further classified into application control and application process programs. The application control program provides a further degree of resource management for the LCS resources, including the telecommunications facilities and the application process programs. The application process programs are dedicated to providing the logical functions for the circulation system.

The on-line programs reside in the highest priority partition, occupying 200,000 bytes of main storage.

The off-line programs operate in a batch mode in a lower priority partition and are designed to function within a 100,000 byte partition size.

SC System Control

The ability to exercise control over the system resides with the computer operator and the TP control terminal operator. The computer operator interface is via the computer console terminal, communicating with the operating system through the standard OS MVT command functions. The TP control terminal operator interface is through a 2740 terminal, designated as the TP control terminal, and utilizing the command functions provided by the LCS. This section describes the capabilities and responsibilities of the two controlling media during the various stages of operation.

SC.1 Start Up

At start up time, the computer operator must initiate the LCS job in the computer, following standard OS MVT job procedures. Upon initiation of LCS, indication that the system is active is transmitted by LCS to the LCS TP control terminal. At this time, the system is operating and the TP control terminal operator has no immediate responsibilities.

SC.2 Operation

During operation of the LCS the computer operator has no immediate responsibilities to the on-line system. The operator is free to perform functions associated with running other jobs in the computer.

Messages of an advisory nature are continually transmitted to the TP control terminal during system operation. These messages keep the LCS TP control terminal monitor continually appraised on the status of the system. Indications of transmission failures on the communication lines require the operator to make decisions as to the validity of a given communication line or terminal. The operator has the capability, via the LCS TP control terminal, to logically remove communication devices, lines and terminals, from the system for purposes of maintenance.

SC.3 Termination

The TPcontrol terminal operator has the capability to initiate termination of the LCS job. Upon entering the appropriate command via the TPcontrol terminal, LCS discontinues accepting input messages and completes processing of the transactions currently active in the system. When all activity has subsided, LCS relays indication of system termination to the TP control terminal. The LCS relinquishes control to the operating system with indication that the job is completed.

The termination of the LCS job results in notification to the computer operator that the job is completed. The computer operator is free to initiate additional jobs in place of LCS.

SC.4 Manual Back-up

There are two equipment conditions that may occur to degrade automated processing. In the first case the terminals in one or more libraries may be down. If such is the case, one alternate terminal known to the librarian at the inoperative terminal, is used to receive and send messages. Generally, two terminals will be on each line. One of the pair will be a high use terminal and the other a low use terminal.

In the second case the entire automated system is inoperative. Then, all libraries must revert to the present manual system. When the automated system begins functioning again the accumulated manual transactions are input to the system. Charges are input with the special charges option. In this type of charge the paging slip is produced at the originating terminal. Books returned while the system is down are discharged via the normal discharge function. The fine, if any, is put on the log tape.

CL Command Language

The Library Circulation System (LCS) has three sets of command messages. The first set of messages deals with the LCS computer operator. The second set of messages is concerned with the LCS TP control terminal. The last set of command messages are the LCS user commands.

The following three sections discuss the three command sets.

CL.1 Computer Operator Commands

Since LCS runs under the supervision of IBM 360 Operating System Multiprogramming with a Variable Number of Tasks (OS MVT), many jobs may be operating concurrently in the total system.

By assigning one terminal, remote from the computer room, as the LCS TP control terminal, LCS appears to the computer operator to run the same as any other program. Also, LCS is an on-line TP system requiring all of the system resources potentially all of the time. For these two reasons, there is little computer operator interaction with LCS.

In order to make LCS operational, the computer operator must initially load the system. This consists of loading the nucleus of the operating system, OS MVT. At this point, the computer operator must enter the time and date.

It is now possible to bring LCS into operation.

If for some reason LCS cancels, the computer operator is required to restart the system from checkpoint.

These are the three required operations of the computer operator to run LCS. Other OS MVT comments are printed out on the computer system console. These comments and options are described in the System Reference Library (SRL) operator's manuals.

CL.2 TP Control Terminal Commands

The requirement for control is fundamental to a large operating system. The TP control terminal is assigned a group of functions to ensure full realization of system capabilities and effectiveness. The TP control terminal is capable of controlling the physical environment of the system, the interaction of the users with the system, and the data flow through the system.

The function of ensuring that computer operations are maintained at a high level of efficiency rests with the TP control terminal operator. This is not to be interpreted as auditing machine room operations.

The TP control terminal controls the communication lines and the terminals on those lines. When a line or a terminal is malfunctioning, the TP control terminal operator can remove the line from the system, intercept messages for the malfunctioning terminal, or route messages to an alternate terminal.

The TP control terminal is able to selectively inactivate terminals.

Files will be inactivated through the TP control terminal when it becomes necessary to physically move disk packs due to hardware failures, preventive maintenance, or in some cases of batch file maintenance. In addition, the control terminal controls the output of system statistics.

CL.2 TP Control Terminal Commands

The control terminal also controls LCS at close time. The TP control terminal operator enters the close transaction which results in emptying the input and output queues and in sending a close message to all the terminals.

CL.3 User Commands

User commands are those commands that may be entered from a LCS terminal and cause a library circulation function to be performed. Detail information on the format, content, and useage of the LCS commands is contained in the Library Circulation System User's Guide, section UG. The commands which are available and described in the User's Guide are mentioned here.

1) General Search. Allows the user to search the Master File (shelf list) by a combination of author and title or by author.
2) Detail Search. Allows the user to obtain the holdings information for a title, including the current circulation status.
3) Charge. Allows the user to charge a book.
4) Renew. Allows the user to renew a book.
5) Save. Allows the user to place a save (hold) on a title or specific book.
6) Discharge. Allows the user to discharge a book.
7) Snag. Allows the user to indicate a book, which has been discharged to a patron, cannot be located.
8) Fine Payment. Allows the user to enter the amount of a fine payment or credit.
9) Page. Allows the user to view subsequent pages of a 2260 display.

ON On-Line Operation

As previously stated, the primary objective of the library circulation system is to improve the speed, accuracy and timeliness with which information may be made available to a library patron.

The function of the programs constituting support for a telecommunication system is to control, systematically and efficiently, the flow of data in a computer-based system, and to provide any required processing of that data.

Under the Library Circulation System (LCS) any message generated by a terminal is first processed by the teleprocessing control program. The teleprocessing control program upon recognizing a positive response to a poll, accepts the message into core. The teleprocessing control program performs the functions of editing, error checking, and logging. The message is then acted upon by the message processing program. Upon completion of the message processing program, any resultant messages are returned to the teleprocessing control program for transmission to appropriate destinations.

In some cases a terminal may be busy when it is desirable to transmit a message(s) to it. Therefore, all outgoing messages are queued on a direct access storage device. All of the messages in the terminal queue are transmitted when the terminal is freed-up or turned-on.

ON.1 Operating System

The computer programs required to support LCS operates under the supervisory control and coordination of the IBM System 360 Operating System (OS), Multiprogramming with a Variable number of Tasks (MVT). MVT supervises the execution of more than one job step at a time, and, in addition, allocates main storage dynamically to each job.

Priorities are assigned to each job so that time-sensitive jobs involving telecommunication may be assured of appropriate access to system resources whenever required. LCS is assigned a very high priority.

ON.2 Teleprocessing Control

Teleprocessing control is the procedure for transferring data between main storage and the input/output terminals. The LCS teleprocessing control has the following capabilities:

- Controlled terminal polling and message input.
- Controlled terminal addressing and message output.
- Input and/or output buffering.
- Error detection and checking.
- Message queu ing
- Routing
- Code translation
- Console operator interface

In a teleprocessing environment, the time and order of the arrival and departure of messages to and from the central processing unit is unpredictable. The LCS teleprocessing control program enables the message processing program to handle the incoming messages as if they were organized sequentially.

Get/Put logic is used in the message processing program to obtain messages to be processed and for placing response messages on the output queues.

The teleprocessing control program maintains statistical information for each terminal. Periodically this information is printed out providing management information concerning terminal usage and effectiveness.

ON.2 Teleprocessing Control

The teleprocessing control program responds to the commands received from the TP control console. In most cases the TP control console can modify the teleprocessing control program. It is possible to alter polling functions, remove entire lines from the system, release messages to a terminal or line and reroute messages.

ON.3 Message Processing

The message processing operation accepts messages from the teleprocessing control program, processes them, and formats responses which are transmitted to the originating terminal.

The message processing operation is composed of a number of modules. Each module is set up to perform a function that is required to complete a process such as charge a book. The individual modules are linked together producing an executable program.

Each module initially saves the contents of the general registers and restores them upon any return to the calling module. In theory, any module may call any other module, however in practice this is not necessary.

The individual on-line modules are discussed in a separate document entitled Program Specification.

ST O.S.U. Programming Responsibilities

In addition to the development work being done by IBM on the on-line and off-line portions of the Library Circulation System, several related tasks are required from the Ohio State University to support the Library Circulation System. This section presents these tasks.

ST.1 Conversion

Several types of conversion problems are involved in implementing the Library Circulation System.

A.) Conversion of present shelf list to machine readable master records.

B.) Conversion of manual circulation records to machine readable records. This process is accomplished by entering the appropriate charge information into the system via terminal. Conversion of these records permits LCS start-up on a current basis as well as providing valuable training for library personnel. It should be noted, however, that present circulation records do not contain the patron identification number. Should any book represented by these records become overdue or subject to recall the notice must be handled manually.

ST.2 Changes to the Shelf List

Changes to the shelf list (acquisitions, revisions, deletions, must be entered into the LCS master file to keep it current. Changes may be encoded via key tape or punched cards. The changes are then edited, formatted, and written onto tape for input to the master file by a program to be provided by O.S.U.

ST.3 Statistical Reports

The following management reports are representative of those that may be obtained by processing the LCS files, including the transaction log tape. It is assumed that The Ohio State University programming personnel will prepare the programs to produce the reports desired.

° Charge activity

A daily report of quantities charged and number of patrons served by type of patron (student, faculty, etc.), by library and by hour of the day. Suggestions for this and other reports are based on the assumption that the patron identification number differentiates the types of patron.

° Circulation activity by call number.

A quarterly report of quantities charged and number of patrons served by location and by call number.

° Discharge activity.

A daily report: cumulated weekly, quarterly, and yearly, of quantities discharged hourly by location.

° Circulation elapsed time analysis.

A yearly report of time items are out in circulation by type of patron or title number of book. May include call number.

ST.3 Statistical Reports

- Saves.

  A weekly report of the number of patrons waiting for items by type of patron and title number. May include call number.

- Purchase alerts.

  A weekly report listing those items which have more than a specified number of patrons waiting for a copy.

- Renewal.

  A weekly report of the number of renewal requests summarized by title and patron. May include call number.

- Reserve.

  A weekly report of the number by title number of books placed on reserve. May include call number and title.

- Overdues.

  A quarterly report of number of items overdue. Sorted by title number and by length of time overdue in that quarter or items overdue by patron type.

- Non-return.

  A quarterly report of items not returned for over a year.

- Fines.

  A quarterly report of fines due and fines paid.

- Lost and found.

  A weekly report of number of items declared lost. A quarterly report of items found.

ST.3 Statistical Reports

- Inventory.

  Count of uniquely identified items in the master file.

- Bindery.

  The number of books sent to the bindery. The number of books returned from the bindery.

- Total circulation.

  A weekly report of the number of items in circulation and number circulated. Activity by general classification could be derived.

- Recirculation.

  A yearly analysis of items circulated more than once. Comparison could then be made from year to year to determine which items were used and the duration of their usefulness.

- Interlibrary loans.

  A weekly report of items circulated to the Interlibrary Loan Office, sorted by title number. Overdue items could also be noted.

- Terminals.

  A monthly report of the number of transactions by terminal.

LIBRARY CIRCULATION SYSTEM

USER'S GUIDE

UPDATE DEC. 1, 1970

Pages to be replaced or inserted are listed in the following table.

Retain this cover page in the document to provide a record of changes.

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General Searches	UG-GENERAL SEARCH
Detail Searches	UG-DETAIL SEARCH
Charge Out	UG-CHARGE
Renewing a Book	UG-RENEW
Discharging a Book	UG-DISCHARGE
Placing a Save	UG-SAVE
Snagging a Book	UG-SNAG
Fine Payments	UG-FINE
Appendices	UG-APPENDIX

LIBRARY CIRCULATION SYSTEM

USER'S GUIDE

GENERAL

The Ohio State University Library Circulation System is an on line computer system which provides a means for rapidly and accurately responding to patron's requests for information on the availability of books. Items can be charged out, saved, renewed, recalled and discharged.

The means of communicating with the Library Circulation System is via the remote terminals which are connected to and controlled by the Library Circulation System. Commands acceptable to the circulation system are entered via the terminals and processed by the circulation system. Two types of terminals are used with the circulation system; the IBM 2740 typewriter terminal and the IBM 2260 display station. The 2740's are located in the department libraries and the Main Library. Several IBM 2260 display terminals are located in the Main Library at the circulation desk and the telephone center. Library patrons may telephone the center to inquire about the availability of a book and to charge and renew books. The purpose of the user's guide is to provide the information necessary to efficiently utilize the Library Circulation System. The User's Manual will deal with the methodology of using the various command messages for the circulation system.

The remainder of this section presents general information and rules which are applicable to all functions of the circulation system. The understanding of this section is a prerequisite for understanding the specific functional descriptions.

Each functional capability is presented in a separate section of the User's Guide for easy reference. The individual sections present the details on the various functions along with examples of the usage of each functional message.

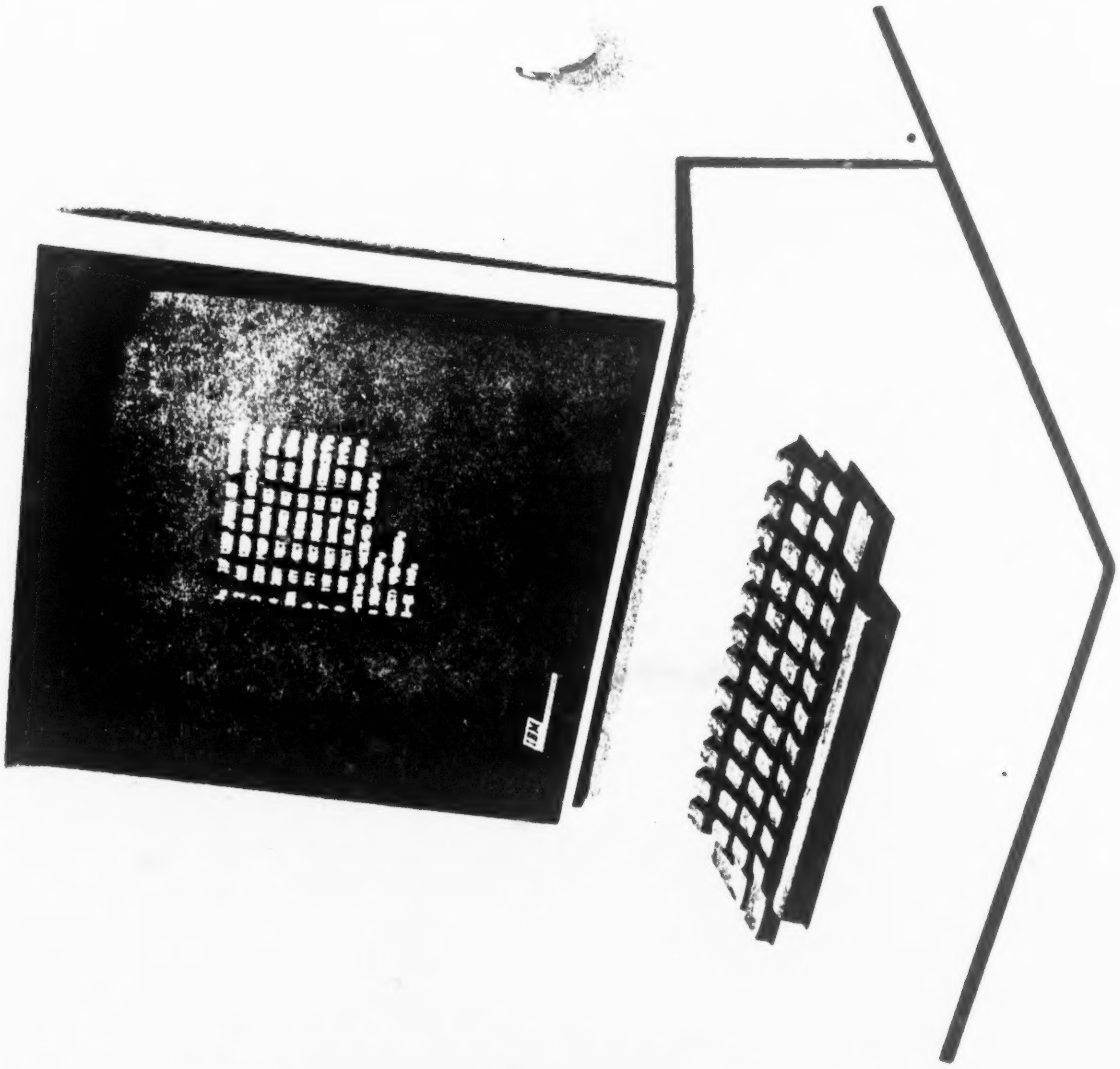
The appendix to the User's Guide contains a chart of the message formats for quick reference along with examples of techniques and the usage of combinations of messages to accomplish a desired function.

TERMINAL USAGE

This section is intended to familiarize the user with the IBM 2260 display station and IBM 2740 typewriter remote terminals, examples of which are shown in Figures 1 and 2 respectively. Sufficient information is contained in this discussion to properly use the Library Circulation System terminals. Additional details on each of the terminals may be found in the appropriate operator manual for the IBM 2260 display station and the IBM 2740 typewriter terminal.

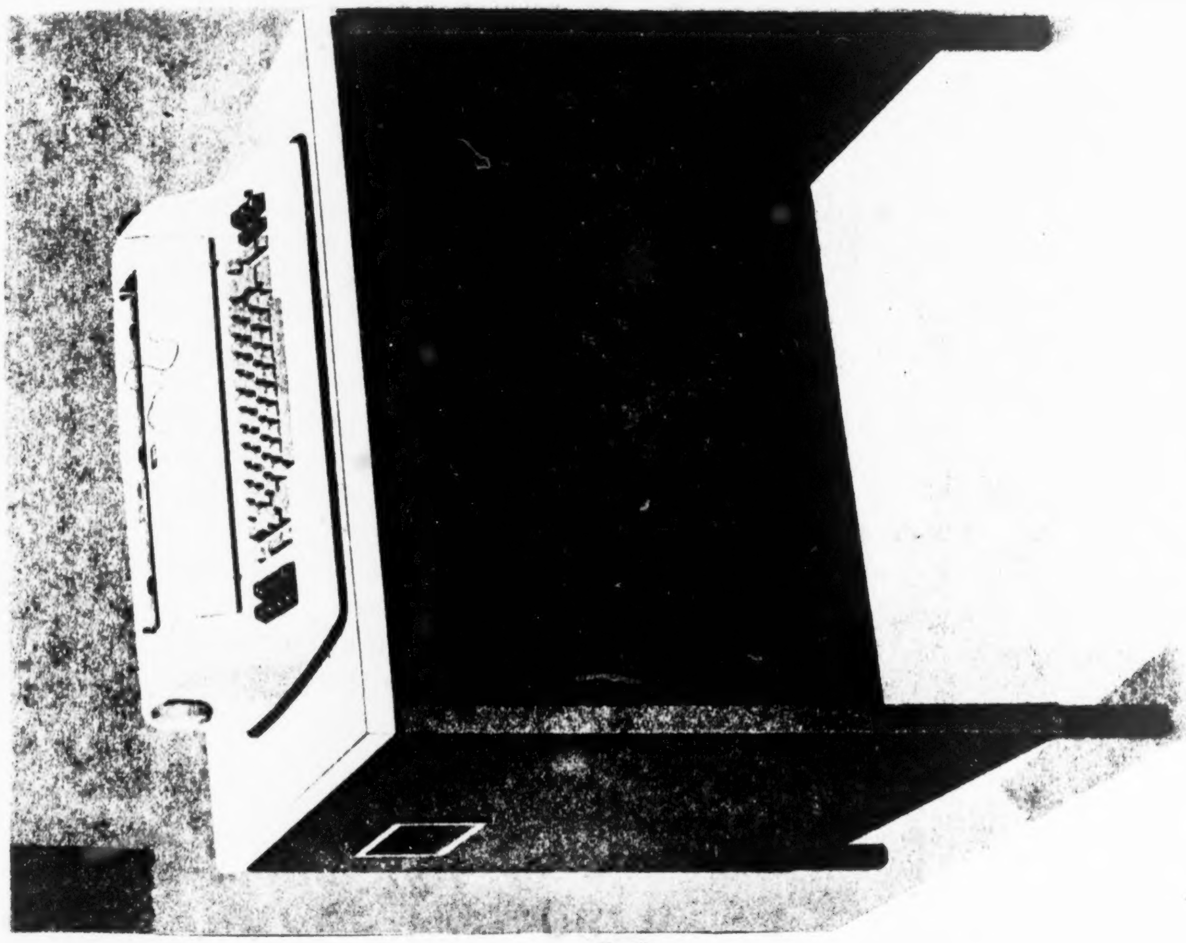
To use the IBM 2740 typewriter terminal the operator must depress the key marked BID. This signals to the system that the terminal is to be used. When the terminal is available the keyboard unlocks and the operator may now enter data via the keyboard. All information is typed in lower case. When the required amount of data has been entered via the keyboard the operator must depress the key marked EOT (end of transmission). This signals the system that all the data has been entered.

To use the IBM 2260 display station the operator must simultaneously depress both the shift key and the start up key to indicate to the system where the beginning of the data is. As the data is entered via the keyboard it is visually displayed on the screen. When all of the data has been entered the operator must then simultaneously depress both the shift key and the enter key thus signalling the end of the data.



IBM 2260 Display Station

Figure 1



IBM 2740 Typewriter Terminal

Figure 2

RULES OF GRAMMAR

The circulation messages all have a basic format which consists of a message identifier, a book identifier, in some cases the patron identifier, and various options associated with each functional message. Each field following the message identifier, (i.e., patron identification, copy number, or option) in a message is preceded by a slash(/) to delimit it from other fields in the message. The message identifier is a three character code which identifies to the circulation system the type of command or function to be performed, for example, CHG for the charge function, and DCG for the discharge function. The book or title identifier may be input in one of the following three ways: 1) Call number, 2) line number, or 3) title number. Each of these title identifiers is presented in more detail in the following discussion.

The call number should be entered exactly as it appears on the spine label of the book. It uniquely identifies the title desired and may be used at any time. The line number form of identifying a book is a means of referring to a line of information as displayed on a 2260 display terminal. This form of book identification may only be used on a 2260 display terminal and implies that the user has immediately preceded the message to be entered with a search or detailed display function. The response from a search or detailed display function is a screen of data containing the requested information. Each line on the display screen is numbered to provide a reference line number which may then be used to identify the book. A more detailed explanation of the search and detailed display is found in later sections of this document. The prime purpose of the line number form of book identification is to allow the user to rapidly identify and enter the book on which an action is to be taken. The third means of identification is by a title number, a unique number assigned to each title in the Ohio State University Library shelf list. The title number is a one to eight character number which identifies a specific title in the shelf list and is an internal control number used by the circulation system for its own purposes. Since the title number does provide a unique means of identifying titles, access to any title in the shelf list is provided through the title number.

When entering one of the three forms of book identification, indication of the form used must be included. This is done by preceding the identifying information with the appropriate code. Call number is entered as CL= call number, for example

CL=TJ181B87; title number is entered as TN= title number, for example TN = 6632; and line number is entered as LN = line number, for example LN = 2.

The book identification forms of call number and title number as previously discussed provide a means of identifying a specific title. To specifically identify a desired copy or volume and copy of a title, the volume and copy information must be provided to the system. Note that the line number form of identification when used in reference to a detailed display implies a specific copy and therefore additional volume and copy information is not required. Where various copies of a holding are not identified with a volume number, a volume number need not be input. If a holding does have specific volume numbers a volume number must be input to identify the volume desired. All books in the libraries do have copy numbers and therefore copy number is a definite requirement. Since a large percentage of copies are copy number one the circulation system will assume copy number one is the copy desired when a copy number is not input in a message. This simplifies the message inputs required since in most cases copy one is the desired copy.

Volume numbers are always preceded with a V and copy numbers are always preceded with a C. For example /V10/C2 identifies volume number 10, copy number 2. In the next example, /C3, copy number three of a monograph is identified. As there is no volume number associated with the book, a volume number is not required in the message. In summary then, any book in the Ohio State University Library may be identified by either using a call number, a line number, or a title number, and any specific holding of the title may be identified by entering the volume number and copy number.

GENERAL SEARCH

The general search function provides the operator with a capability of remotely accessing the library shelf list. A search for a specific title may be performed by using a combination of the author's last name and the title of the book. A search for all works by a particular author may be performed by using an abbreviation of the author's last name. General searches may only be performed on the 2260 display terminal because of the possibility of producing large amounts of information.

The general search message consists of the message identifier, a search code, and optionally the number of matches to skip. The format of the general search message is contained in the Appendix for reference. The construction of the search code to be used in the message is presented in the following discussion.

SEARCH CODE

The search code is the criteria, or key, that the circulation system will use to search the shelf list. The search code is comprised of an abbreviation of the author's last name and an abbreviation of the first significant words of the title. The author abbreviation is merely the first four characters of the author's last name. For example, a book authored by Brown, William would use an abbreviated author code of BROW. The title abbreviation consists of the first five characters of the first significant words in the title. For English language titles, a list of words which are considered to be non-significant is contained in the appendix. These words, when contained in the beginning of the title, are not used in constructing the title abbreviation. When constructing the title abbreviation for a foreign language title all words are considered to be significant. To construct a title abbreviation then, first determine if the title is an English or foreign language title. If it is an English language title consult the list of non-significant words as contained in the appendix to see if any of the words in the title should be eliminated. Eliminate all non-significant words until the first significant word is encountered. Then accept all remaining words, significant and non-significant. Once the significant words of the title are determined use the first five characters of these significant words. Figure 1 shows examples of authors and titles with the appropriate search codes constructed. If a book does not have an author then the author abbreviation of the search code should be constructed of four blanks.

Author searches may be performed by constructing the author abbreviation in the previously described manner and indicating to the circulation system the absence of a title. This is done by replacing the title abbreviation with five dashes. For example, if it is desired to determine all titles authored by someone by the name of Smith the search code would consist of the first four characters of the author's last name, in this case SMIT, and to indicate it is an author search the title abbreviation would be five dashes. The search code for this example would be SMIT-----.

AUTHOR TITLES SEARCHES.

To search for a specific title when the author and title are known, construct the author title abbreviation as described under the section entitled Search Code and enter the message, as shown in the following example. SH1/BENTHISTO.

AUTHOR SEARCHES

To search for all titles written by a particular author, construct the author search code as described in the section entitled Search Code, and enter the message as shown in the following example. SH1/SMIT-----. Note the use of five dashes in place of the title abbreviation to signify an author search.

1. Author - No Author
   Title - The Makers of Canada

   Search Code - ƀƀƀƀMAKER (ƀ indicates a space)

   In example 1, there is no author so 4 blanks (spaces) are used for the author abbreviation. The first significant word in the title is MAKERS (THE is a non-significant word - see the list of non-significant words in the appendix) so the title abbreviation is MAKER.

2. Author - Taylor, John Eric
   Title - Engineering Designs
   Search Code - TAYLENGIN

3. Author - U.S. Civil Aeronautics Administration
   Title - Airline Airports
   Search Code - U.S.AIRLI

4. Author - Cooper, A. M.
   Title - How to Supervise People
   Search Code - COOPHOW T

In example 4, the title abbreviation uses the first 5 characters of the title, including the blank or space between words.

Figure 1. Search Code Examples

OUTPUT FROM THE GENERAL SEARCH

Figure 2 contains the output from the general search that will be used to explain the contents of the display. At the top of the display is the input message as entered by the operator. Each title that has been retrieved by the general search occupies one line on the display. The lines of information retrieved are numbered from one through ten and on each line is contained the author's name, the title and the publication date. From this information the operator may select the title desired. At the bottom of the display is an indication of how many titles were retrieved for the input search code. This is indicated as the number of matches. An indication of the number of matches skipped is also provided, as well as an indication that all matches were retrieved or all were not retrieved is also shown.

```
sh1/bent-----


SH1/BENT-----
01 BENTON, JOSIAH HENRY            THE BOOK OF COMMON PRAYER                1910
02 BENTLEY, W. P                   BRIEF LIVES OF THE AMERICAN PRESIDENTS
03 BENTON, FRANCES                 ETIQUETTE                                1956
04 BENTHAM, JAMES                  THE HISTORY AND ANTIQUITIES OF THE CON 1812
05 BENTZEN, AAGE                   INTRODUCTION TO THE OLD TESTAMENT$2D E 1952
06 BENTINCK, HENRY CAVENDISH       TORY DEMOCRACY                           1918
 PLEASE RESPOND  00006  MATCHES      0    SKIPPED        (ALL RETRIEVED IN 1)
```

Figure number 2 - GENERAL SEARCH DISPLAY

VIEWING ADDITIONAL PAGES

Because of the abbreviated search code it is possible to obtain a large number of matches of titles against the shelf list. A display screen may contain up to ten titles that have been retrieved. Since it is possible to obtain many times this number of titles the operator has the ability to examine subsequent pages of retrieved output. To examine succeeding pages the operator uses the page command indicating the page number desired to be viewed. For example PG2 requests to view page number 2. A discussion of the page command is contained in the section entitled Paging.

SKIPPING MATCHES

The paging capability will allow the operator to view three pages of retrieved information which is equivalent to thirty titles. If more than thirty titles have been retrieved as indicated on the output the operator must reinitate the search and use the skip option. The skip option indicates to the general search function the number of titles or authors to skip before returning output to the operator. The skip option is used by merely including SKIP and the number of authors or titles to skip in the input message. In this example, SH1/U.S.CONGR/SKIP=30, the general search function will ignore the first thirty matches and retrieve titles beginning with the thirty first match.

DETAILED SEARCH

The purpose of the detailed search is to allow the operator to obtain the status of the holdings for a given title. In addition to the holding status the operator may request that all current circulation and save information for the specific title be presented.

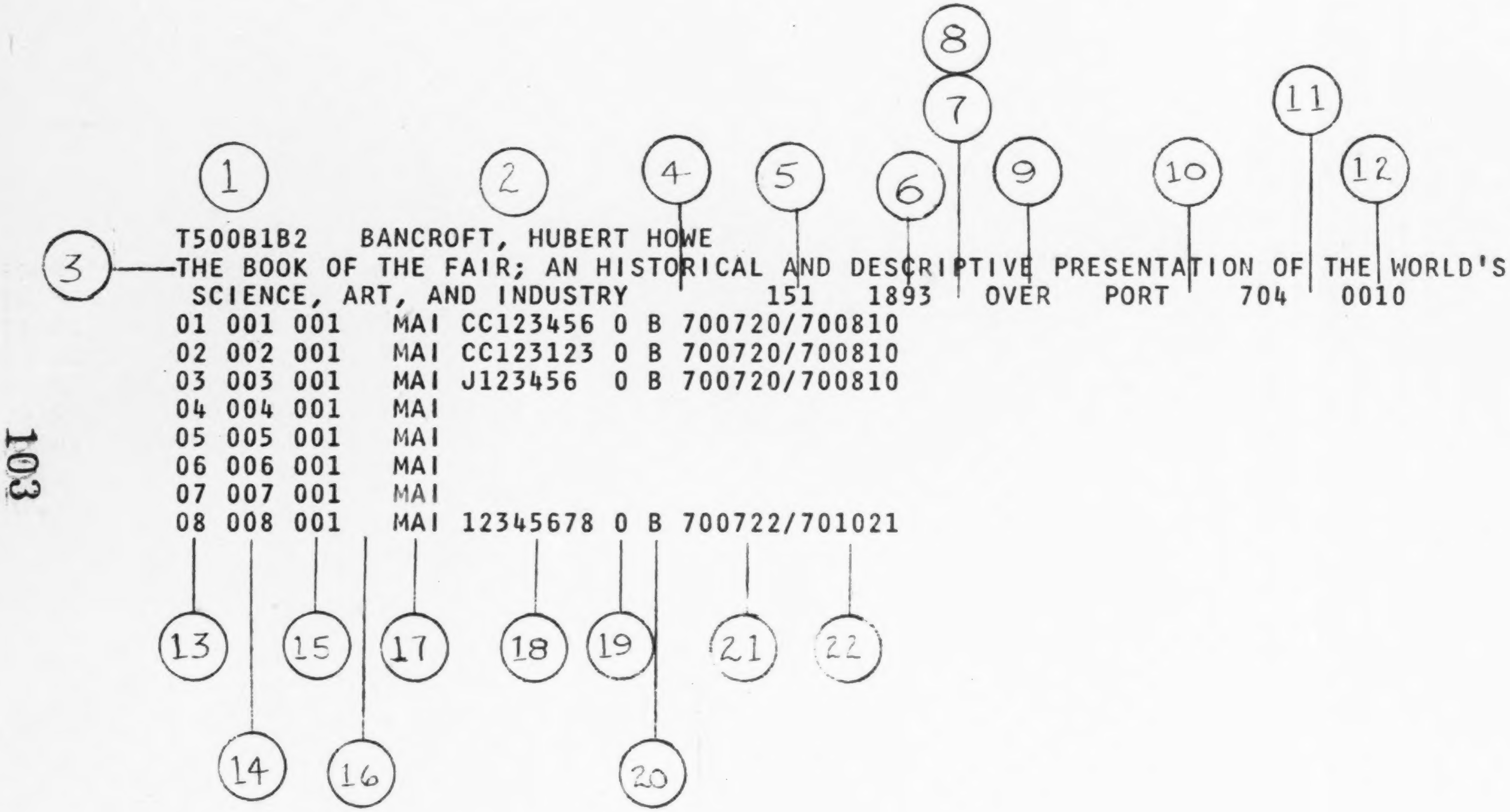
The detailed search message consists of the message identifier, a title or book identifier and option designators. The format of the detailed search message is contained in the Appendix. The book identifier may take the form of a line number, a call number or a title number as described in the Rules of Grammar in the introduction to the User's Guide. If the status of a specific holding for the title is desired then the optional identifiers of volume number and copy number may be added to the call number or title number form of book identification. When volume number and copy number are input to identify a specific holding, only the status of the specific holding is returned to the operator. The absence of the volume number and the copy number in the input message will result in having all the holdings information returned to the operator.

OUTPUT FROM THE DETAILED SEARCH

Figure number 1 indicates the output received from a detailed search and is used to describe the fields contained in the detailed search output. The information fields in figure 1 have been numbered for reference purposes and identification of the various fields in the example will be by the reference numbers.

FIELD NUMBER	FIELD
1	Call number
2	Author
3	Title
4	LC number - or NOLC if not available
5	Title number
6	Publication Date (If available)
7	SER - Serial indicator. When present indicates the title is a serial
8	NENG - Non English indicator. When present indicates the title is non English.
9	OVER - Oversize indicator. When present indicates the book is an oversize book.
10	PORTxxxx - Portfolio number in which book is located (Main Library only)
11	MONO - Monographic Set indicator. When present, indicates title has been designated a monographic set.
12	Number of holdings. (Not displayed if Copy 1, Main)
13	Reference line number
14	Volume number
15	Copy number
16	Holdings condition code (See Appendix for holdings condition codes and meanings)
17	Library location (See Appendix for a list of library location codes)
18	Patron identification
19	Number of specific saves for the copy
20	Circulation status (See Appendix for circulation status codes and meanings)
21	Date charged in the form of year, month, day
22	Date due in the form of year, month, day.

If a book is available for circulation fields 18 through 22 will not be present in the detailed search output, thus indicating the book is available for circulation.



```
T500B1B2   BANCROFT, HUBERT HOWE
THE BOOK OF THE FAIR; AN HISTORICAL AND DESCRIPTIVE PRESENTATION OF THE WORLD'S
 SCIENCE, ART, AND INDUSTRY          151   1893   OVER   PORT    704    0010
01 001 001   MAI CC123456 0 B 700720/700810
02 002 001   MAI CC123123 0 B 700720/700810
03 003 001   MAI J123456  0 B 700720/700810
04 004 001   MAI
05 005 001   MAI
06 006 001   MAI
07 007 001   MAI
08 008 001   MAI 12345678 0 B 700722/701021
```

Figure Number 1 - DETAIL SEARCH DISPLAY

REQUESTING ENTIRE HOLDINGS

If the operator desires to examine all holdings for a specific title, the detailed search should be performed using the title identification only, as shown in the following example: SH2/CL=B171G83.

REQUESTING A SPECIFIC HOLDING

The status of a specific holding of a title may be obtained by identifying the specific holdings volume number and copy number in the detail search transaction. The following example requests a specific holding: SH2/TN=6611/V5/cl.

REQUESTING SPECIFIC SAVES

The identity of the specific saves on a book for the special patron classes may be requested by identifying the specific holding's volume number and copy number (including copy number 1) and specifying the ALL option. The following example requests the specific saves for a book: SH2/CL=P25N36/c1/ALL.

REQUESTING ALL CURRENT CIRCULATION AND SAVE INFORMATION

The operator may request to see all current circulation and save information for a given title by using the all option. This is done by merely including the keyword ALL in the detail search message as shown in the following example: SH2/LN=3/ALL. Figure number 2 contains an example of the additional information which is returned. The additional information obtainable includes identification of the saves, if any, for the title and any books in circulation which are not contained in the master shelf list holdings for the title. Circulation records appear in the standard format, as shown in Figure 1.

```
sh2/cl=bs631c33/all

BS631C33   CASE, O. D., & COMPANY   CASE'S BIBLE ATLAS      10444   1879
01      001   MAI CC666666 1 B 700713/700803
12345678   S  700713  ## 87654321   S  700713  ##
55555555   S  700713  ## PAGE 1
```

Date of Save Request

S - Identifies Additional Information
as a Save Request

Identification of Patron Requesting the Save

Figure Number 2 - DETAIL DISPLAY WITH ALL OPTION

VIEWING ADDITIONAL PAGES

When the detailed search is performed on a 2260 display terminal the visible information returned is equivalent to one screen, or twelve lines. When more than one screen of information has been retrieved, as indicated by the number of holdings, the 2260 operator may request to view subsequent pages of information. To do this the operator merely enters the page request and the desired page number. For example PG2 requests page number 2 to be displayed. A discussion of the page command is contained in the section entitled Paging.

SKIPPING HOLDINGS

The paging capability allows the operator to view three pages of retrieved holdings information which is equivalent to 29 holdings. If a title has more than 29 holdings, as indicated by the count of the holdings on the display (field number 12 in figure 1), the operator may view the additional holdings by using the skip option. To do this, the operator merely reinitiates the detail search and includes the keywrod SKIP= and the number of holdings to skip. In the following example; SH2/TN=6633/SKIP=15, the first 15 holdings are skipped and the holdings returned in the detail display would begin with the sixteenth holding.

CHARGING A BOOK

The charge function provides the operator with the ability to charge a book to a patron or patron class. To accomplish the charge the operator enters the charge message identifying the book and the identification of the patron to whom the book is to be charged. The charge function may be performed remotely which means that the charge is entered in one library for a book which is physically located in a different library. When a patron presents a book at a charge desk this is a special charge and implies the patron has the book in hand as opposed to the previously mentioned remote charge. When a book is charged by the operator, a paging slip, which identifies the book and the patron, is printed on a terminal either at the location of the book for a remote charge or at the location of the circulation desk for a book in hand or a special charge.

The format of the charge message is shown in the appendix. The charge message consists of the message identifier, the book identifier, patron identification and the various options which may be exercised with the charge function. Remember that the book identification may take the form of a line number, a call number or a title number as applicable to the situation at hand. The rules of grammar as contained in the introduction to the User's Guide indicate how and when the various forms of book identification may be used. The patron identification will either be the identifying number for the faculty member, student, or courtesy card holder or one of the special patron classes such as bindery, reserve or circulation. A reference list of the patron identifications in the special patron classes is contained in the appendix for quick reference.

OPTIONS

The following discussion presents the information on the various options which may be used when charging a book.

SPC	The Special Option allows the operator to indicate that the charge is for a book in hand situation as opposed to a remote charge and will result in having a paging slip returned to the operator. To use the special option, the operator merely indicates the key word SPC in the charge message.

MAIL	The Mail Option allows the operator to indicate that the patron has requested to have the charged book mailed to the patron. When the Mail Option is used a code indicating the book is to be mailed will appear on the paging slip. To use the mail option, the operator merely includes MAIL in the charge transaction.
DUE=	The Date Due Option allows the operator to establish the loan period of the book, thus overriding the loan period computed by the circulation system. To use this option the operator enters DUE= and the date the book is to be returned in the form of year, month, day.
NOSV	The No Save Option allows the operator to charge a book to a patron other than a patron who was next in line in the save queue for the title. This has the effect of overriding the save queue in allowing the book to be charged to any patron. To utilize this option the operator merely enters NOSV in the input message.
ERROR	The Error Option allows the operator to charge a book under conditions which would normally preclude the book being charged to a patron. A book whose system maintained condition code indicates the book is noncirculating may be charged by using the Error Option. Also a copy of a book which is not contained in the holding information may be charged by using the Error Option. To invoke the Error Option the operator merely includes ERROR in the charge transaction.

CHARGING A BOOK REMOTELY

A book may be charged by using a terminal located in a library which is physically different from the location of the book. For example, if an operator in the Main Library charged a book which was located in the Music Library, or if an operator in the Telephone Center charged a book which was located in the Education Library. The remote charge is accomplished by merely entering a charge message in the normal manner. Indication of a successful charge will be returned to the operator and at the same time the paging slip for the book will be printed at the location of the book. Books may be remotely charged in any library that is open. The circulation system maintains the open or closed status of all libraries. If a book, located in a library which is closed, is remotely charged the charge transaction will be rejected. The following example illustrates a remote charge: CH/LN=1/PI=11074518.

CHARGING A BOOK IN HAND

When a book is presented at a circulation desk for charge-out the operator must indicate in the charge transaction that the book has already been paged, thereby eliminating the requirement for a paging slip to be produced at the location of the book. This is done by entering the charge transaction in the normal way and including in the message indication of a special charge (SPC). The following example illustrates a book in hand charge transaction: CHG/CL=TA140H8A2/PI=A4224781/SPC.

CHARGING A BOOK TO A PATRON NOT IN THE SAVE LIST

To charge a book to a patron who is not in the save list for a title the operator must include the No Save option in the charge message (NOSV). The following example illustrates the use of the NOSV option: CHG/LN=3/PI=CC666662/NOSV.

CHARGING A NON-CIRCULATING BOOK

The operator may charge a non-circulating book, that is a book indicated to have a condition code of non-circulating, by invoking the special and error options in the charge transaction. To do this include in the input message the key words SPC and ERROR. Non-circulating books must be charged on the book in hand basis and may not be charged remotely, thus the requirement for the special option. The use of the error and special options insures that the operator is definately aware that a non-circulating book is being charged out. Charging a non-circulating book is illustrated in the following example: CHG/CL=AH220A1M23/V1/C2/PI=12336218/SPC/ERROR.

DESIGNATING A DIFFERENT DUE DATE

When a book is charged, the date due is computed using a loan period which is determined as a function of the patron type and the condition code of the book. A chart of loan periods based on the patron types and the condition codes of the book is contained in the Appendix for quick reference. If the operator desires to charge the book for a loan period different from the loan period depicted in the chart, the date due must be entered in the message. This is done by including in the message the key word DUE= and the date due in the form of year, month, day. CHG/CL=T371F88/DUE=700815/PI=CC123452.

CHARGING SERIALS OR MONOGRAPHIC SETS

Serials represent a special case to the circulation system since the shelf list used by the circulation system does not contain holding information for serials. Serials may only be charged to faculty members and the charge must be on a book in hand basis. Therefore all charge transactions for serials must include the special option (SPC). To avoid entering a duplicate charge transaction for a serial which is already indicated to be charged it may become necessary to use a ficticious volume number or copy number. If a ficticious copy number is used the error option must be indicated in the charge transaction. This takes the same form as the charge transaction described under the heading charging a non-circulating book.

RENEWING A BOOK

This section describes the method in which a book may be renewed. The renewal function allows the renewal of a book which is currently charged to a patron. Renewal of a book by a patron may be accomplished remotely by calling the circulation center on the telephone or by appearing in person at one of the various circulation points in the department or main libraries. The librarian or circulation center operator may renew a book by entering the renewal command into the circulation system. The format of the renewal message is contained in the appendix. The renewal message is identified by REN and consists of the book identification and optionally the patron identification and a date due in place of the date due which would be computed by the circulation system. The book identification may take the form of a line number, a call number, or a title number, as described in the rules of grammar in the introduction.

A book may be renewed one time. If an attempt is made to renew a book which has previously been renewed a message will be returned to the operator indicating "BOOK ALREADY RENEWED" and the book will not be renewed.

If a book which is overdue is renewed a fine will be computed and the amount of the fine will be displayed to the operator as a part of the renewal slip.

A book which has saves placed on it may not be renewed. This situation is indicated to the operator by the message "SAVES PREVENT CHARGE OR RENEWAL".

RENEWAL OUTPUT

Upon successful completion of the renewal function a renewal slip will be printed on the 2740 from which the message was input, or in the case of the 2260 terminal it will also be displayed on the 2260 to show the operator the renewal date and the renewal slip will be printed on the 2740 associated with the 2260. An example of the renewal slip is shown in figure number 1.

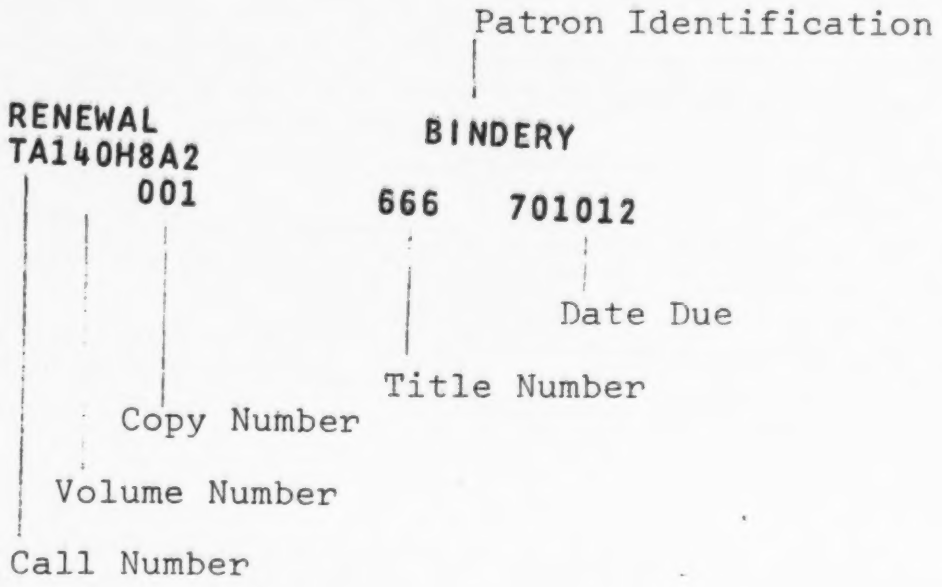

Patron Identification
RENEWAL
TA140H8A2
001
BINDERY
666
701012
Date Due
Title Number
Copy Number
Volume Number
Call Number

Figure Number 1 - RENEWAL SLIP

USING PATRON IDENTIFICATION

The identification of the patron currently charged with the book is an optional input. If the patron identification is entered in the message then this patron identification is compared against the patron charged with the book as carried in the circulation system. This provides an additional level of checking to insure that the correct book is being renewed. The following example indicates the use of patron identification in a renewal message: REN/CL=TA140H8A2/C2/PI=BINDERY.

DESIGNATING A DIFFERENT DUE DATE

When a book is renewed, the date due is computed using a loan period which is determined as a function of the patron type and the condition code of the book. A chart of loan periods based on the patron types and the condition codes of the book is contained in the Appendix for quick reference. If the operator desires to renew the book for a loan period different from the loan period depicted in the chart, the date due must be entered in the message. This is done by including in the message the key word DUE= and the date due in the form of year, month, and day. The following example illustrates a renewal in which an optional date due is specified: REN/TN=6633/V2/C1/DUE=701015.

DISCHARGING A BOOK

Discharging a book has the function of releasing from responsibility the patron currently charged with the book and informing the circulation system that the copy is again available for circulation to another patron.

To discharge a book the operator enters the discharge message, the format of which is shown in the Appendix. The discharge transaction consists of the message identifier, the book identifier and optionally, the patron identifier, indication that the book is lost, indication of a claimed return, and an error override for a book which is not charged. The normal discharge procedure merely requires the message identifier, DCG, and the book identification which may take the form of a line number, a call number with a volume number and copy number if required, or a title number with a volume number and copy number if required, following the Rules of Grammar as contained in the introduction.

Upon successful completion of the discharge transaction a discharge slip will be returned to the operator. An example of the discharge slip is shown in figure number 1. If the input terminal was a 2260, a discharge slip will also be produced at the 2740 printer associated with the 2260 display terminal. The discharge slip may be given to the patron as a receipt of returning the book. The operator should examine the discharge slip for indication of a fine due in the case of an overdue book, or for indication of the next patron to whom the book should be charged. This occurs when there have been saves applied for the book.

To insure that books are indeed returned to their proper library locations books may only be discharged from terminals located in which the book belongs. For example, books in the Education Library may only be discharged from terminals in the Education Library. If an attempt is made to discharge a book from a terminal which is not located in the location of the book, the message "ILLEGAL DISCHARGE TERMINAL" is returned to the operator.

```
DISCHARGE          12345678
T500B1B2
BANCROFT, HUBERT HOWE   007    001   MAI    SIZE   PORT=704
THE BOOK OF THE FAIR; AN HISTORICAL AND DESCRI           151    701019
```

The discharge slip contains the following fields on each line of the slip.

Line 1
- identification of discharge slip
- patron identification

Line 2
- Call number

Line 3
- Author
- Volume number (007)
- Copy number (001)
- Library location (MAI - see appendix for list of library location codes)
- Oversize book indicator (SIZE) if applicable
- Portfolio number (PORT=704) if applicable

Line 4
- Title
- Title number (151)
- Date Due (701019) (year, month, day)

Figure 1. Discharge Slip Example

The following discussion presents the various situations which may exist when a book is discharged.

Claimed Return

If a patron claims that a book for which he is charged with has been returned, then the operator may discharge that book with the claimed return option, thereby freeing the patron from the charge. To use the claimed return option the operator merely enters the normal discharge transaction and includes in the discharge transaction RETURN, the claimed return option as shown in the following example: DCG/CL=T500B1B2∠V7/C1/RETURN.

Lost Book

When a patron reports that a book has been lost the operator may discharge the book and indicate the book is lost. To report a lost book the operator merely enters the normal discharge transaction and includes the lost book option, LOST, in the message. Since a patron cannot claim a book has been returned at the same time he reports it lost, the lost option may not be used with the claimed return option. The following example depicts the use of the lost option: DCG/TN=2057/LOST.

Discharging a Book Not Charged

If a patron returns a book and the system indicates the book is not charged, the operator may discharge the book by using the error option. This will produce a discharge slip which may be given to the patron as a receipt. To use the error option the operator merely enters the normal discharge transaction and includes in the message ERROR, as shown in the following example: DCG/LN=2/ERROR.

Overdue Book

When a book is discharged which is overdue the circulation system will compute the fine based on the number of days the book is overdue. The amount of the fine will be indicated on the discharge slip and the operator should inform the patron of the fine amount. An example of a discharge slip indicating a fine is shown in figure 2. If the patron desires to pay the fine the operator should enter the fine payment as described in the section entitled Fine Payment. The operator need not be aware that a book is overdue when a discharge is entered.

Saves on a Book

The operator need not be aware that there are saves on a book and the discharge transaction is entered in a normal manner. When the book is discharged the circulation system will indicate on the discharge slip the patron to whom the book should be charged. An example of a discharge slip with indication of a save is shown in figure 3. The operator should then enter a charge for the indicated patron as described in the section entitled Charging a Book.

The patron in the save list to whom the book should be charged is determined using the following patron type priority (listed in order of priority):

Reserve
Circulation
Patrons - by date of request
Interlibrary Loan (ILL)
Reference and Interlibrary Loan (ILL)
Kentucky, Ohio, Michigan Interlibrary Loan (KOMILL)
Cataloging
Bindery
Repair

```
DISCHARGE          CC123123
TJ1755391947
1947           001       ENR
SCHWAMB, PETER
FINE= $019.70                   813       700101
```

Figure 2. Discharge Slip - Fine Due

```
DISCHARGE           J123456
TJ181B87
BROWN, HENRY T           001   MAI
FIVE HUNDRED AND SEVEN MECHANICAL MOVEMENTS, E        839   700803

PLEASE CHARGE: 12345678
```

Figure 3. Discharge Slip - Save Identified

The following discussion presents a summary of the optional functions of the discharge transaction.

Patron Identification	If the operator desires, the patron identification may be entered in the message. When the patron identification is included in the message the circulation system will make an additional test to insure that the book being discharged is indeed charged to the patron indicated in the discharge transaction.
ERROR	The Error Option when included in the discharge transaction will permit a book which is not charged to be discharged thereby providing a patron with a discharge slip.
LOST	The Lost Book Option is used by the operator to indicate the patron is reporting a book lost.
RETURN	The Claimed Return Option is used by the operator to indicate a patron is claiming that a book has been returned. The Claimed Return Option and the Lost Option may not both be used in the same message.

PLACING A SAVE ON A BOOK

The Library Circulation System provides the ability to place a patron save on a title. This ability is available to the operator by inputing a save transaction. Any number of saves may be placed on a title. Note the use of the word title. A save for a patron is placed on a title rather than a specific copy of the book. This allows the patron to receive the very next copy of the title which is returned to a library. When a book which has a save placed on it is discharged, identification of the patron who received the book is given to the operator. A patron save may be only placed on a title when all available copies of the title are either in circulation or are not available for circulation. A save for a specific copy of a title may be placed on a copy when the patron is one of the special patron types such as Bindery or Reserve.

THE SAVE MESSAGE

To apply a save against a title or a copy the operator must enter in the save transaction. The format of the save message is contained in the Appendix. The save message consists of the message identifier, a book identifier, the patron identification and optionally the key word ERROR. The book identifier may take the form of a line number, a title number or a call number as explained in the Rules of Grammar in the Introduction to the User's Guide. The patron identification may take the form of a patron number in the case of a title save or in the case of a specific save on a copy one of the special patron classes. A list of the allowed patron classes and forms of patron numbers is contained in the Appendix. The error option in the save message allows the operator to override the date of the requested save.

PLACING A SAVE ON A TITLE

When a patron requests a book and there are no copies of the title available for circulation, a save for that patron should be placed on the title. To place the save enter the message identifier, the book identifier and the patron identification. Note that since this is a title save, identification of the book takes the form of a call number or title number without specifying a specific volume or copy number. The patron identification will be the student number, courtesy card holder number or faculty ID number. Once the save message has been entered a save for that patron will be associated with that title. The following example illustrates the title save: SVE/CL=TA140H8A2/PI=A431782.

SAVING A SPECIFIC COPY FOR A SPECIAL PATRON CLASS

When one of the special classes of patrons such as Bindery, Reserve, Circulation, Repair, Cataloging, etc. requires a particular copy of a book which is not available, a save on that particular copy may be entered for the special patron type. This save is affected by entering the message identifier, the book identifier, and in this case including the specific volume and copy number as well as the patron identification of the special patron class. A list of legal patron identifications is contained in the Appendix. In the following example, SVE/CL=AH220A1M23/V4/C1/PI=BINDERY, a specific copy has been saved for the bindery.

CHANGING THE DATE OF THE SAVE REQUEST

When there are several patron saves for the same title the patron whom first requested the save will be the patron to receive the first copy of the book returned from circulation. The date the save was requested is used to determine the patron first in the save list. The operator may override the current day's date when placing the save. To do this the operator merely includes in the message the key word ERROR= and the date desired to be stored with the save request. The date is in the form of year, month and day. The following example illustrates the use of this option: SVE/TN=1056/PI=CC781254/ERROR=700810.

VIEWING SAVE REQUESTS

Save requests associated with a title or specific copy of a title may be determined by performing a detailed search. An explaination of how to accomplish the detailed search is contained in the Detailed Search section.

SAVE OUTPUT

Upon successful completion of a save transaction the operator will receive the response back "TRANSACTION COMPLETED". If a save transaction is entered incorrectly the operator will be informed of any errors made in the message. Examples of possible errors are contained in the Appendix.

SNAGGING A BOOK

The Snag function allows the operator to flag or indicate those books which cannot be found in the stacks when the book is paged for a patron. The Snag transaction is used to indicate the snag condition for a book which has just been charged. The patron is no longer charged for the book and is therefore relieved from responsibility.

The Snag transaction consists of the message identifier and the book identifier. The book may be identified by a line number, a call number or a title number as appropriate following the Rules of Grammar as contained in the Introduction. Remember that a specific copy is being snagged and therefore if appropriate the volume number and copy number must be supplied.

Upon successful completion of the snag transaction the message "TRANSACTION COMPLETED" is returned to the operator.

When the book which was originally charged has been properly snagged the operator should attempt to determine if another copy of the book is available. This may be done by performing a detailed search as described in the Detailed Search Section to determine the holdings information for the particular title. If another copy is available it may be charged to the patron. If another copy is not available a save may be placed on the title following the procedures contained in the section entitled SAVE.

The format of the SNAG message is contained in the Appendix. Figure 1 contains an example of a Snag Transaction. Consult the Appendix for any error messages which may occur as the result of attempting a Snag Transaction.

```
SNG/CL=B171G83/V2/C1
```

Figure Number 1. Snag Transaction Example

PAGING

The Library Circulation System provides the capability to examine subsequent pages of a multipage display. This function is applicable only to 2260 display terminals. The detailed search and general search functions may produce many lines of information which will result in several pages of viewable information. The operator may request to see additional pages of information by using the page function.

VIEWING ADDITIONAL PAGES

Up to three pages of information may be produced as a response to a display request on a 2260 terminal. To examine any of the three pages the operator uses the page command and indicates the page number to be viewed. The page command consists of PG followed by the page number. For example, to view page two of a multi-page response the operator must enter PG2. If an incorrect page number is entered the operator is informed of the error by the message "INVALID PAGE NUMBER".

FINE PAYMENT

The fine payment capability performs the function of crediting a patron's account with a dollar amount. An operator may receive payment from a patron and credit the appropriate patron's account by entering the fine payment transaction.

PAYING A FINE

To enter a fine payment the operator enters the message identifier, the patron identification and the amount being paid. The amount paid is entered in the form of dollars and cents where the first three characters are dollars followed by a decimal point and the cents. Leading zeroes are required for the dollar amount. For example, $1.65 should be entered as 001.65.

Upon successful completion of the fine payment a payment receipt is returned to the operator. If the payment was entered through a 2260 display terminal the payment receipt is also returned to the associated 2740 printing terminal. The payment receipt may be given to the patron as a receipt.

Figure number 1 contains an example of a fine payment transaction and the resulting payment receipt.

CREDIT OPTION

The credit option may be used to credit a patron's account with a dollar amount. The credit is entered as described under PAYING A FINE with the optional word CREDIT included in the message. An example of a credit entry is FPD/PI=C52136/CREDIT.

```
fpd/pi=b463972/002.50


PAYMENT REC'D       B463972
$002.50     700826
```

Figure 1 - FINE PAYMENT

USER'S GUIDE APPENDICES

APPENDIX	CONTENTS
A	Message Formats
B	Examples
C	Non Significant Words
D	Circulation Status Codes
E	Holdings Condition Codes
F	Library Location Codes
G	Loan Periods
H	Patron Identification
I	Error Messages

LIBRARY CIRCULATION SYSTEM MESSAGE FORMATS

The formats of the library circulation system messages are presented in a coded form to facilitate quick reference. Detail information on the use or meaning of a particular field is contained in the respective functional description section.

The symbols { } and [ ] that are shown in the message formats are used to aid in defining the message formats. These symbols are NOT TO BE ENTERED as a part of the message. The symbols have the following meaning:

{ } indicates that a choice must be made. One of the parameters from the vertical stack must be selected and entered as a field in the input message.

[ ] indicates an optional field. Enter the field when appropriate.

Capital letters are entered as shown. Lower case letters are replaced with the appropriate information.

```
                                                         E
General          {Algorithm }                            O
Search     SH1/  {Author-----}  [/SKIP=nn]               T
_____________________________________________________________________________________________________

                 {LN=nn          }                                                     E
Detail           {CL=Call number }                                                     O
Search     SH2/  {TN=title number} [[/Vnnn] [/Cnnn]]  [/SKIP=nn]  [/ALL]              T
_____________________________________________________________________________________________________

                 {LN=nn          }                                                                                                E
                 {CL=call number }                                                                                                O
Charge     CHG/  {TN=title number} [[Nnnn]  [/Cnnn]]  /PI=patron id  [/SPC] [/MAIL]  [/NOSV]  [/DUE=date]  [/ERROR]    T
_____________________________________________________________________________________________________

                 {LN=nn          }                                                             E
                 {CL=call number }                                                             O
Renew      REN/  {TN=title number} [[/Vnnn] [/Cnnn]]  [/PI=patron id]  [/DUE=date]            T
_____________________________________________________________________________________________________

                 {LN=nn          }                                                             E
                 {CL=call number }                     {[/RETURN ]}                            O
Discharge  DCG/  {TN=title number} [[/Vnnn]  [/Cnnn]]  {[/LOST]   } [/ERROR]                   T
_____________________________________________________________________________________________________

                 {LN=nn          }                                                             E
                 {CL=call number }                                                             O
Save       SVE/  {TN=title number} [[/Vnn]  [/Cnn]]  /PI=patron id   [/ERROR=date]            T
_____________________________________________________________________________________________________

                 {LN=nn          }                       E
                 {CL=call number }                       O
Snag       SNG/  {TN=title number} [[/Vnnn]  [/Cnnn]]    T
_____________________________________________________________________________________________________
                                                     E
Fine                                                 O
Payment    FPD/   PI=patron id  / ddd.cc [/CREDIT]  T (d=dollars,  c=cents)
_____________________________________________________________________________________________________

               {1}  E
               {2}  O
Page       PG  {3}  T
_____________________________________________________________________________________________________
```

Example 1 REMOTE CHARGE VIA TELEPHONE CENTER

In the following example, a patron has called the telephone center and requested a copy of Campaigns In Russia by John Philippart.

A. The first action taken by the operator is to perform a general search using the author/title search code to determine if the title is held by the libraries. Figure number 1A illustrates the input message and resulting response.

B. After examining the list of titles displayed in figure 1A the operator determines that line number 01 is the desired title and performs a detailed search to determine the availability of individual copies of the book. Figure 1B shows the detail search input for the line number and the resulting holdings status.

C. The operator examines the holdings display, as shown in figure 1B, resulting from the detail search and determines that copy number 1, located in the Main Library, is available. The operator may inform the patron of the libraries which contain an available copy of the book and allow the patron to select the copy desired, based on the location of the book. The operator asks the patron on the telephone for his identification number (student number, employee number, or courtesy card number) and enters a charge message for copy number 1 (line 1 on the detail display). Figure 1C shows the charge message and resulting acknowledgement.

Example 1 cont.

D. The charge transaction has been successful as indicated in figure 1C by the page slip image returned to the display station. The operator informs the patron that the book is charged to him and may be picked up in the Main Library.

```
SH1/PHILCAMPA
```

```
                                                                    1813
01 PHILIPPART, JOHN                  CAMPAIGNS IN RUSSIA
 PLEASE RESPOND  00001  MATCHES       0    SKIPPED      (ALL RETRIEVED IN 1):
```

Figure 1A

```
sh2/ln=1
```

```
DC235P5   PHILIPPART, JOHN   CAMPAIGNS IN RUSSIA      13414   1813
01      001   MAI
PAGE 1
```

Figure 1B

```
chg/cl=dc235p5/pi=cc475723
```

```
PAGE                 CC475723
DC235P5
PHILIPPART, JOHN          001   MAI
CAMPAIGNS IN RUSSIA       13414   700914
```

Figure 1C

Example 2 SAVE VIA TELEPHONE CENTER

In the following example a patron has called the telephone center and requested a copy of A Childs History of England by Charles Dickens.

A. The operator proceeds as described in Example 1, steps A and B, resulting in a detail display as shown in figure 2A.

B. After examining the copy availability as shown in the detail display in figure 2A, the operator determines that all copies of the book are charged out. The operator informs the patron that a save may be placed on the book for the patron. In this case the patron requests a save be placed on the book.

C. The operator requests the patron's identification number and enters a Save message as shown in figure 2B. The operator informs the patron that he will be notified when the book is available.

```
sh2/tn=12453

DA32D541907   DICKENS, CHARLES   A CHILDS HISTORY OF ENGLAND      12453   1907
0001
01      001   MAI A452376   0 B 700824/700902
PAGE 1
```

Figure 2A

```
sve/cl=da32d541907/pi=a688331

TRANSACTION COMPLETED
```

Figure 2B

Example 3 BOOK IN HAND CHARGE

In the following example a student brings a book to be charged out to a circulation desk in a library.

A. The operator requests the student's identification number and enters a Charge message as shown in figure 3A.

B. A page slip, as shown in figure 3A, is printed out at the terminal indicating the book has been charged. The page slip is removed from the typewriter terminal and placed in the book, completing the charge transaction.

```
chg/cl=ts155s57/c3/spc/pi=b463782


PAGE
TS155S57            B463782
SCHROCK, EDWARD M          003   ENR
QUALITY CONTROL AND STATISTICAL METHODS      3569   700915
```

Figure 3A

Example 4 DISCHARGE - SAVE ON BOOK

In the following example a book has been returned to a department library and the operator must discharge the book.

A. The operator enters the discharge message, as shown in figure 4A and a discharge slip is printed at the typewriter terminal.

B. The operator examines the discharge slip, as shown in figure 4A and notices the additional comment PLEASE CHARGE: CC454562. This indicates there is a save on the book and the book must be charged out to the patron number identified in the comment, CC454562.

C. The operator enters the charge message and a page slip is printed at the terminal, as shown in figure 4B. The operator removes the page slip from the terminal and places it in the book. The book is then placed on a hold shelf until the patron to whom it has been charged picks it up. (At the end of the day, a notice is sent to the patron informing him that the book is available and charged to him.)

```
dcg/cl=ug635r9s7


DISCHARGE           13463102
UG635R9S7
STOCKWELL, RICHARD E          001   MAI
SOVIET AIR POWER$1ST ED        4295   701012


PLEASE CHARGE: CC454562
```

Figure 4A

```
chg/cl=ug635r9s7/pi=cc454562


PAGE                    CC454562
UG635R9S7
STOCKWELL, RICHARD E          001   MAI
SOVIET AIR POWER$1ST ED        4295   700915
```

Figure 4B

List of non-significant words and phrases.

A

AN

INTRODUCTION

INTRODUCTION TO

JOURNAL

JOURNAL OF

THE

...

Circulation Status Codes

The following codes appear on the detail search output display, indicating the circulation status of the copy.

CODE	MEANING
B	Charged
K	Reported Lost
L	Recall to Reserve
M	Recalled
O	Renewed
V	Snagged
W	Claimed Return
ƀ (blank)	Available
D	Discharged, save on book
Y	Discharged, recalled to reserve

Holdings Condition Codes

The following condition codes appear on the detail search display and indicate the condition of the associated holding.

CODE	MEANING
ƀ (blank)	Circulating copy
C	Non circulating (reference, rare books, etc.)
D	Lost
E	Missing
F	Lacking
G	Withdrawn
H	Limited Circulation - 1 week
I	Limited Circulation - 3 weeks

LIBRARY LOCATION CODES

CODE	LOCATION
ACQ	Acquisition Dept.
AGE	Agricultural Eng. Dept.
AGI	Agricultural Admin. Office
AGI	Agricultural Economics
AGI	Agricultural Educ. Dept.
AGI	Agricultural Extension Lib.
AGI	Agricultural Labs. Lib.
AGI	Agriculture
AGI	Animal Husbandry
AGI	Animal Science
AGI	Dairy Science
AGI	Dairy Technology
AGI	Horticulture Dept.
AGI	Poultry Science
AGI	Rural Scoiology Dept.
AGO	Agronomy
AIR	Air Science
ARC	Architecture
ARC	Brown Hall Lib.
ART	Art-Ceramic
AVI	Aviation School
AVI	Don Scott Field
BIB	Bibliography Collection
BOP	Biophysics
BOS	Agricultural Biochemistry
BOS	Biological Science
BOS	Microbiology
BOT	Bot. and Zoology
BRW	Browsing
CAT	Catalog Department
CER	Engr-Ceramic
CHE	Chemical Engineering
CHE	Chemistry
CHE	Sharp Library
CHI	Childrens Hospital
CLD	Classical Languages Dept.
COM	Clark Library
COM	Commerce
COM	Economics
CRA	Engr-Drawing
CRL	Consultant for Library Research
CRL	Research Consultant
DOC	Documents
EDL	English Dept. Library
EDU	Education
EDU	Bureau of Educ. Research

CODE	LOCATION
ENG	English Grad
ENR	Aero-Civil Engineering Library
ENR	Aeronautical Eng. Dept.
ENR	Davis Welding
ENR	Engineering
ENR	Engineering-Electrical
ENR	Engr-Aero
ENR	Engr-Civil
ENR	Engr-Elec
ENR	Engr-Industr
ENR	Engr-Mechanics
ENR	Engr Mech Engr
ENR	Engr-Welding
ENR	Mechanical Engineering
FIN	Fine Arts Lib.
FOR	Foreign Lang Grad
FOR	Modern Languages Graduate
GEO	Geology
GEO	Ohio Geological Survey
GEO	Orton Library
HEA	Health Center
HEA	Medical Library
HEA	Physiological Chemistry
HEA	Physiology
HIS	History Grad
HOM	Home Econ.
JOU	Journalism
LAW	Law Library
LMC	Little Magazine Collection
MAI	Debate Collection
MAI	Main Library
MAI	Reference Hall
MAP	Map Library
MAT	Mathematics
MER	Mershon Lib.
MET	Engr-Metal
MET	Lord Hall
MIN	Engr-Mineral
MUS	Music
MUS	Music Lib.
OSU	O.S.U. Collection
PED	Physical Educ. Dept.
PER	Perkins Obs.
PEW	Phys. Ed. - Women
PHA	Pharmacy
PHO	Engr-Photogr
PHY	Cole
PHY	Physics
POL	Political Science Dept.

CODE	LOCATION
RAR	Rare Book Collection
REF	Reference
SER	Serials Div.
SOC	Social Administration
SOC	Social Work
SPE	Special Materials
STO	Stone Laboratory
TOP	Topaz
UND	Undergraduate Library
VET	Vet. Medicine
WCL	West Campus

LOAN PERIODS

	Monographic	Monographs			
Patron Class	Sets and Serials	Limited 1 Week	Limited 3 Weeks	Regular	Non Circulating
FACULTY	1	1	3	13	*
STUDENT	—	1	3	3	*
RESERVE	13	13	13	13	*
BINDERY	13	13	13	13	*
REPAIR	4	4	4	4	*
ILL	4	4	4	4	*
RAILS	4	4	4	4	*
KOMILL	4	4	4	4	*
CATALOGING	4	4	4	4	*
CIRCULATION	4	4	4	4	*
LIBRARY USE ONLY	1 Day	1 Day	1 Day	1 Day	1 Day

* Supplied by operator in form of date due or will default to one week.

Patron Identification

The following are the allowable forms of patron identification which may be used in the library circulation system messages.

$$PI = \left\{ \begin{array}{l} \text{NNNNNNNN} \\ \text{ANNNNN} \\ \text{CCNNNNNN} \\ \text{RES} \\ \text{BINDERY} \\ \text{REPAIR} \\ \text{ILLOAN} \\ \text{RAILS} \\ \text{KOMILL} \\ \text{CATALOG} \\ \text{CIRCLE} \\ \text{LUO} \end{array} \right\}$$

NNNNNNNN - Represents an eight digit faculty or employee identification number.

ANNNNN - Represents a student identification number consisting of an alphabetic character followed by five numeric characters.

CCNNNNNN - Represents a courtesy card holder identification number. The number consists of CC in the first two positions followed by six numeric digits.

CFNNNNNN - Represents a courtesy card holder with faculty loan privledges. The number consists of CF in the first two positions followed by six numeric digits.

RES - Indicates the special patron type as reserve shelf. Up to five additional characters may follow the RES to designate the library. For example, RESEDU could designate a reserve shelf in the Education Library.

BINDERY - Designates the bindery as a special patron.

REPAIR - Designates the repair area as a special patron.

ILLOAN - Designates the Interlibrary loan office as a special patron.

Patron Identification (cont.)

RAILS	- Designates the Reference and Interlibrary Loan Service as a special patron.
KOMILL	- Designates the Kentucky, Ohio, Michigan Interlibrary Loan Office as a special patron.
CATALOG	- Designates the Catalog Department as a special patron.
CIRCLE	- Designates the Circulation Department as a special patron.
LUO	- Designates Library Use Only as a special patron class.

ERROR MESSAGES

The following self explanatory error messages can be received at a terminal in response to an operator error or inconsistency in the function to be performed.

A COPY IS AVAILABLE, CANNOT ADD SAVE

A 2740 CANNOT SPECIFY A LINE OR PAGE NUMBER

BOOK ALREADY CHARGED

BOOK ALREADY DISCHARGED

BOOK ALREADY RENEWED

BOOK NOT CHARGED

CALL NUMBER NOT IN LIBRARY SHELF LIST

CANNOT CHARGE MONOGRAPHIC SETS OR SERIALS REMOTELY

CONDITION CODE PREVENTS CHARGE

ILLEGAL ALGORITHM

ILLEGAL DISCHARGE TERMINAL

ILLEGAL INPUT COMMAND

ILLEGAL INPUT TRANSACTION SEQUENCE

ILLEGAL PAGE OR LINE NUMBER

ILLEGAL TITLE NUMBER

ILLEGAL VOLUME/COPY

LIBRARY CLOSED

MUST PRECEED A LINE OR PAGE COMMAND WITH A SEARCH

PATRONS CANNOT SAVE SERIALS OR MONOGRAPHIC SETS

PATRON NBRS DO NOT MATCH

REQUESTED SAVE IS NOT IN CIRCULATION

SAVES PREVENT CHARGE OR RENEWAL

SERIALS CANNOT BE CHARGED BY STUDENTS

TITLE NOT FOUND

VOLUME AND/OR COPY CANNOT BE SPECIFIED

VOLUME NOT IN CIRCULATION - CANNOT PERFORM FUNCTION

Each message is checked for format or content errors to insure the validity of information. The following information describes the type of errors that are identified in a message.

Message errors are identified by the comment LIST OF ERRORS being displayed or printed at the originating terminal. Following this comment appears identification of the fields found to be in error. The comment associated with each error that is detected begins on a new line. The list of possible error conditions is shown in the following.

LIST OF ERRORS
TN=
ILLEGAL FIELDS
ALGORITHM
UNIDENTIFIABLE(S)
OPTION(S)

ERROR=
DUE=
PI=

LN=
SKIP=
COPY
VOLUME

It should be noted that periodically 1 error may result in 2 error comments being printed. For instance if CL= or TN= or LN= is printed out, the comment ILLEGAL FIELDS will also be printed.

The following discussion presents conditions that cause each error comment to be output.

DUE=

The parameter after the equal sign was not a legal date. The date must be entered year, month, day sequence. The year must be numeric and greater than 69. The month must be numeric and between 00 and 13. The day must be numeric and between 00 and 32.

SKIP=

The parameter after the equal sign was not numeric or was less than 1 or greater than 10,000.

COPY

More than 3 characters or digits were entered for a copy. The copy field is determined by locating a "C" immediately following a "/".

VOLUME

More than 3 characters or digits were entered for a volume. The volume field is determined by locating a "V" immediately after a "/".

ERROR=

The parameter after the equal sign was not a legal date. The date must be entered year, month, day sequence. The year must be numeric and greater than 69. The month must be numeric and between 00 and 13. The day must be numeric and between 00 and 32.

TN=

The title number was not greater than zero, less than 99999999 or numeric.

PI=

The patron identification parameter was not equal to one of the valid patron codes as contained in the Appendix.

LN=

The line number was not greater than zero, less than 31 or numeric.

UNIDENTIFIABLE(S)

A field was detected that contained an equal sign and either contained more than 5 characters or less than 2 characters to the equal sign.

A field was detected that did not contain an equal sign and contained either more than 6 or less than 4 characters.

A field with 2 characters followed by an equal sign was detected. The first 2 characters were not one of the following 4 possibilities:

TN
PI
CL
LN

OPTION(S)

A field was detected that did not contain an equal sign and was not equal to one of the following fields:

LOST
NOSV
MAIL
ERROR
TRACE
RETURN
nnn.nn
SPC
ALL
SH1
SH2
CHG
DCG
SVE
REN
SNG
FPD
PGN

ILLEGAL FIELDS

One or more of the input field(s) or the combination of fields is invalid for the transaction type. See the preceding sections for the legal input types and their corresponding legal entries.

ALGORITHM

More than nine characters were entered for the algorithm.